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MATERNITY AND INFANT CARE

IN TWO RURAL COUNTIES IN WISCONSIN

BY

FLORENCE BROWN SHERBON, M. D.

AND

ELIZABETH MOORE

RURAL CHILD WELFARE SERIES No. 4
Bureau Publication No. 46

WASHINGTON
GOVERNMENT PRINTING OFFICE
1919

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LETTER OF TRANSMITTAL.

U. S. DEPARTMENT OF LABOR,
CHILDREN'S BUREAU,
Washington, April 10, 1919.

SIR: Herewith I transmit the fourth report prepared by the Children's Bureau in its study of conditions affecting infants and mothers at childbirth in rural areas of the United States. A comparison of such vital statistics as are available for the United States with those of other countries shows 10 other countries with relatively fewer deaths among babies under 1 year of age and 13 other countries with relatively fewer deaths among women from conditions directly related to childbirth.

Considerably more than half the births in the United States occur in rural areas, and, although the mortality rate among babies under 1 year of age is apparently somewhat lower in the rural part of the birth-registration area than in the cities, the difference seems to affect only those babies who have survived the first month of life. For infant deaths during the first month—and these are more than two-fifths of all infant deaths—and for maternal deaths, there is no evidence of a lower average rate in rural than in urban areas. The need for clearer understanding of rural conditions and for constructive measures is plain.

The present unit in the rural inquiry followed the schedule and general plan prepared by Dr. Grace L. Meigs, as director of the bureau's division of child hygiene, and her assistant, Miss Viola I. Paradise. Valuable help in planning the details of the work in Wisconsin was rendered by the Wisconsin State Board of Health and by the extension division of the University of Wisconsin. The field work was done and the report was written by Dr. Florence Brown Sherbon and Miss Elizabeth Moore, of the Children's Bureau staff.

Respectfully submitted.

JULIA C. LATHROP, *Chief.*

Hon. WM. B. WILSON,
Secretary of Labor.

MATERNITY AND INFANT CARE IN TWO RURAL COUNTIES IN WISCONSIN.

INTRODUCTION.

OBJECT OF THE SURVEY.

This report is one of a series of studies undertaken by the Children's Bureau which deal with the conditions surrounding childbirth and infancy in typical rural communities. The subject of maternity care (including prenatal care) is emphasized in these studies because it is one of the main factors influencing a child's chance of being born alive, uninjured, and with sufficient vitality to carry him through the hazardous period of early infancy. How serious and important a problem this is, is indicated by the fact that two-fifths of the deaths of babies in the registration area of the United States—over 60,000 deaths in a year—are due to premature birth, injury at birth, congenital weakness, and malformations,[1] conditions which can be prevented to a great extent through and only through better care of the mother during pregnancy and at confinement. And even this large figure takes no account of the heavy losses—how heavy, no one knows—from stillbirths and miscarriages.

Furthermore, it is a well-recognized fact that even a baby sturdy at birth has a much better chance of life and health if he has a strong, well mother to nurse him and care for him. Yet it is estimated that in one year in the United States "at least 15,000 women * * * died from conditions caused by childbirth,"[2] and the amount of sickness and even permanent invalidism among the mothers of the country caused by preventable complications of childbearing can not even be estimated.

Evidence coming to the bureau from many sources, especially through letters from country women themselves, indicates that the problem of securing adequate medical and nursing care at confinement is especially serious for country mothers; that in some districts and for many mothers such care is practically unattainable, either because of actual isolation or because of the expense resulting from

[1] Mortality Statistics, 1915, p. 645, U. S. Bureau of the Census. Washington, 1917.

[2] Meigs, Dr. Grace L.: Maternal Mortality from All Conditions Connected with Childbirth in the United States and Certain Other Countries, p. 7. U. S. Children's Bureau Publication No. 19, Miscellaneous Series No. 6. Washington, 1917.

distance from physicians and nurses. Indeed, this appears to be one of the serious handicaps of country life as at present organized; and studies looking toward means for relieving this situation were, therefore, considered urgent by the bureau. The first requisite in facing this, as any, problem is knowledge of the facts.

Three studies of maternity and infant care in rural communities were made in 1916, in representative districts of Kansas, North Carolina, and Wisconsin.

FIELD OF THE SURVEY.

As the field of the inquiry in Wisconsin, two counties were chosen, one in the southern and one in the north-central part of the State. These are referred to throughout the report as the northern and the southern counties. Both are fertile agricultural country, in which dairying is the prevailing type of farming. In both there is a considerable industrial population in some of the villages and in certain places in the open country. Both have poor roads; hence travel in the country is apt to be difficult, and many homes are almost isolated. In other respects the two districts are widely dissimilar.

The northern county lies in what was originally lumber country and is still largely in the transition stage from pioneer clearing of "cut-over" land to more settled farming. While some farming communities are well-established and wealthy, the larger part of the county still faces the necessity of ridding the soil of its brush, stumps, and trees before crops can be raised. Consequently, like most pioneer communities, these districts have little money to spend; and many families live on isolated clearings or in remote settlements under primitive conditions. The large majority of the settlers have been German, with an important Polish contingent in addition; both these nationalities cling to their foreign customs and habits of thought and to a certain extent to their languages, making the district as a whole distinctly foreign in its atmosphere. The northern county was chosen in consultation with the State board of health because of the large proportion—about one-sixth, according to preliminary figures—of births attended by midwives. It was considered that a study in such an area would throw light upon the problems of rural midwifery in general. In addition, the county is typical of conditions prevalent over large parts of northern Wisconsin, Michigan, and Minnesota, which were forest territory not much more than a generation ago.

In its general economic and sociological features the southern county is typical of large farming areas on the prairies of southern Wisconsin and Minnesota and northern Illinois. It is situated in the older part of the State, where farming has been well-developed for

more than a generation and has changed little within that period; it is, therefore, a rich, well-established community. While about half its people are of foreign parentage, they are in the main thoroughly Americanized. This county was selected, on the advice of the extension division of the State university, because it is a prosperous but conservative community in which it was hoped that a survey by the Children's Bureau, and the children's health conference to be held in connection therewith, would increase the interest in public provision for the welfare of children. Furthermore, the State vital statistics, showing that this county had in 1914 an infant mortality rate of 115 per 1,000 births, one of the highest rural rates in the State, indicated that problems affecting the health of babies needed special attention.

Both counties were too large to make a survey of the whole area practicable; therefore a limited number of townships, with the villages therein, were covered. These townships were selected with a view to representing as fully as possible the variety and range of conditions in each county.

SCOPE AND METHOD.

The survey made in Wisconsin, like that in Kansas,[1] covers two main topics: The conditions affecting the health of the childbearing mother—the general living conditions of the family, the work done by the mother, and the care she received during pregnancy and at the time of confinement; and the care—especially the feeding—and survival of the babies. Throughout these rural surveys, the chief aim has been to give a picture of the district studied, rather than to indicate any connection between certain conditions and the infant mortality rate.

The information upon which the report is based was secured by the bureau's agents through personal interviews with mothers (or, in cases where for some reason the mothers could not be seen, with their near relatives) who had borne children within the two years preceding the survey, and who, when those children were born, were living in the territory covered. As the first step in finding families where there had been births, the names of the parents were copied from the birth certificates of this territory for the designated period. Secondly, a canvass was made in each district to find additional unregistered births. In nearly all cases the information was given by the mother herself. The mothers interviewed were appreciative of the object of the inquiry and answered the many personal questions with generous frankness.

[1] Moore, Elizabeth: Maternity and Infant Care in a Rural County in Kansas. U. S. Children's Bureau Publication No. 26, Rural Child Welfare Series No. 1. Washington, 1917.

Records were filled out for stillbirths as well as for live births within the given period, but not for miscarriages. No attempt was made to interview the mothers of illegitimate children, even in the few cases where such births were registered; in a study dealing with the provision for maternity and infancy in normal families it was considered that a few records of abnormal conditions would add nothing of value.

The records secured do not cover absolutely all the births which occurred, for some families had moved out of reach. The number thus lost was comparatively small, however, because the farming population in the areas studied is not migratory.

In the northern county the survey covered the births of the two years from July 1, 1914, to June 30, 1916; in the southern county the period was from May 1, 1914, to April 30, 1916. In each case this was the two-year period immediately preceding the beginning of the survey.

The report is based upon information concerning 614 families who lived in the selected districts—453 in the northern and 161 in the southern county. In 47 of these families, the mother had borne children twice during the two-year period of the survey and within the districts studied, so that the records cover the history of 661 confinements. Since nine pairs of twins and one set of triplets were born in this group, 672 births are included; 648 of these were live births and 24 still births.

SUMMARY OF FINDINGS.

The infant mortality rate in the northern county was low compared to the average for the United States birth-registration area; the stillbirth rate was somewhat higher than the rates found for six of the eight cities in which infant mortality studies have been made by the bureau. The death rate of mothers from causes connected with childbirth was high. Many births were attended by midwives in certain sections of this territory; a proportion as high as four-fifths was found in one of the Polish settlements. Moreover, it was not uncommon for mothers in inaccessible neighborhoods to go without any regular attendant at childbirth. Few women, even among those who had a physician at childbirth, secured any prenatal care; postnatal supervision was rare. Trained nurses were almost never employed for childbed nursing and practical nurses seldom. In many neighborhoods the midwives were the only nurses available who had had any obstetrical training. They gave some care during the lying-in period to about half their patients and also nursed a few mothers who had a doctor at confinement.

In this county the employment of midwives appears to be both a result of isolation in the Wisconsin forests and a survival of European custom. From the point of view of her patients the advantages of the midwife are: First, many foreign women prefer a woman rather than a man to help at childbirth; second, the neighborhood midwife is easier to secure than the doctor and more likely to be on time for the delivery; third, some midwives render nursing service during the lying-in period, which is highly appreciated; fourth, the midwife is much cheaper than the doctor; fifth, in the experience of most of these mothers the midwife whom they and their acquaintances have employed has seemed adequate to the situations which have arisen. On the other hand, some of them have had unfortunate experiences while under the care of physicians. Consequently they have come to believe that they get better service from the midwives.

The chief argument against the midwife is that, while an experienced midwife may be successful in conducting normal deliveries, she is a dangerously uncertain reliance if anything goes wrong; and there is always the possibility that something may go wrong. On an isolated farm it is even more unsafe than in the city to wait until complications have developed before sending for a doctor. A remark made by a Polish father aptly illustrates this point. His wife became sick during pregnancy and, though there was a physician 8 miles away, he sent to the county seat, 25 or 30 miles away, for a doctor whom he knew. He said: "When you get something for protection, like a doctor, you want the best there is. It was worth the money." Substitute the words "an attendant at birth" for "a doctor" in his phrase, and you have the crux of the midwife problem. This father employed a neighborhood midwife for his wife's confinement, two weeks later, because he and his wife regarded childbirth as a normal occurrence and did not realize that she then needed "something for protection—the best there is."

In the southern county the infant mortality rate was higher than in the northern county but the stillbirth rate was lower. Only one mother died at childbirth. Practically all the births were attended by physicians; there were no midwives in practice. The mothers, however, received much less prenatal and postnatal care from their doctors than their safety and the health of their babies required. Furthermore, the situation as to obstetrical nursing was far from satisfactory; trained nurses were difficult to secure and competent "practical nurses" or attendants were too few to fill the need for their services.

In neither district were the housewives on the farms obliged to provide for large crews of hired men at any special season, for dairy farming distributes the farm work more evenly through the year

than does grain farming. But, on the other hand, it was common in both districts for the women to help with the milking and to have more or less dairy work added to their household duties. In the northern district half the farm mothers helped with the field work also, even in some cases with such heavy work as pitching hay and grain or clearing land; many of the Polish immigrant women did practically men's work in the fields in addition to their housework.

In both districts at the sixth month half the babies were exclusively breast fed; at 9 months of age only between one-fifth and one-fourth had been weaned. The record of these Wisconsin mothers for nursing their babies through the first nine months compares favorably with that of city mothers where the Children's Bureau has studied this subject, but is not so good as in the other country districts studied.

Birth registration proved to be defective in both districts, especially the northern.

A TYPICAL NORTHERN COUNTY SCENE.

PART I. THE NORTHERN COUNTY.

ECONOMIC AND SOCIAL CONDITIONS IN THE COUNTY.

This county is located near the center of the northern half of Wisconsin, in the forest belt. It is one of the largest counties in the State, 30 miles wide and 55 miles long; it is nearly half as large again as the State of Rhode Island. The population in 1910 was a little over 55,000, an increase of 27 per cent in the preceding decade. Within the county at the time of the survey there were 12 incorporated villages, of which the largest had at the last census less than 1,000 population; and one city of approximately 17,000, which is the county seat.

Topography and soil.[1]

The Wisconsin River flows south nearly through the center of the county; its tributaries, some of which are important streams, drain the whole area. The sandy, alluvial soil which covers the river bottom, varying from less than a mile to 6 or 8 miles wide, is the poorest soil in the county; over much of its extent no attempt is made to raise crops of any kind.

Outside this valley, practically the whole of the county except the southeastern corner is a gently rolling country, rising to about 400 feet above the river. Nearly all of it is well drained. The uplands are broad and nearly level, while the numerous stream valleys, though deep, have gentle slopes. The soil of these uplands and valleys is clay or loamy clay, very fertile and giving good yields of all crops suitable to the northern climate. It is especially well adapted to hay and forage crops. At the time of the survey uncleared land of this type sold for about $25 an acre, while cleared land was valued as high as $100 an acre. In the belt of deeply weathered glacial clay, which extends over the western third and across the northern edge of the county, the older farming communities are exceedingly prosperous.

In the southeastern section the soil is much lighter, and in the valley of the Plover River decidedly sandy, though not so poor as that along the Wisconsin River. This soil is the result of much more recent glacial drift than that in the western part of the county and

[1] Data from Preliminary Report on the Soils and Agricultural Conditions of North Central Wisconsin, Bulletin No. XI, Wisconsin Geological and Natural History Survey, 1903.

[illegible] with stones and even bowlders. In this distri[illegible] ridges—glacial moraines—are a common feature of th[illegible] and the intervening depressions are frequently so poor [illegible] swamps result.

[illegible]rth as this the winters, of course, are severe; but, wh[illegible] [illegible]ature is low, this district does not suffer from the hi[illegible] blizzards which are common farther west on the plain[illegible] plentiful throughout the county that the winter cold [illegible] so great a hardship as might be anticipated. The rainfa[illegible] [illegible]ample—the year of the survey was an exception—for a[illegible] and keeps the pastures luxuriant through the summer.

[illegible]eral development.

[illegible] part of the State was originally forest country, covere[illegible] [illegible] growths of hardwood, hemlock, and more scattered pine[illegible] [illegible]ers were lumbermen who came for the pine timber, mos[illegible] [illegible] removed years ago. Almost the only vestiges of tho[illegible] [illegible] are the great pine stumps still standing in many place[illegible] [illegible] timber and brush; and an unpleasant reminder the[illegible] [illegible] large—sometimes as large as a small house—and ex[illegible] [illegible] to uproot. In more recent years the hardwood and [illegible] valuable assets; many tracts of hardwood [illegible] standing, but hemlock is now becoming somewhat

[illegible] certain parts of the county 40 or 50 years ago [illegible] important factor until within the past 25 [illegible] agricultural settlements grew up around a number [illegible] separated by miles of forest; this isolation [illegible] another still persists to a certain ex[illegible] [illegible] stages of development are represented, [illegible] apart. In some of the older districts, on [illegible] well improved, with ample buildings [illegible] land. In such districts farm values are [illegible] comfortably as in the southern part of [illegible] are in many instances the children [illegible]

[illegible] conditions prevail to-day. Large areas [illegible] or what is called "cut-over land," [illegible] and full of stumps. Such tracts [illegible] companies—the successors of the [illegible] common for a young hus[illegible] little or none is stumped, [illegible] build a rough two-room shack

UNCLEARED CUT-OVER LAND.

A CABIN IN A NEW CLEARING.

CLEARED LAND IN THE OLDER SECTIONS.

of lumber from their own trees, and move onto the "farm." During the first few years, the husband often works out by the day during the summer and works on his land in the winter, felling trees and pulling stumps. Gradually, as they get pasture and hay land, they develop a herd of dairy cattle, building at first a rough barn shed for them. After a few years, perhaps 5 or 10, they build a large barn. And in a few years, usually not many after this, they build for themselves a substantial, well-finished, roomy house. But almost always the house comes after the barn, for it is a saying in this country that "the barn will build the house, but the house won't build the barn," a proverb which seems economically sound. And all this time the couple is rearing a family of children, not a small family, either, in most cases, but a healthy one. "Never had a doctor in the house except when the babies were born" is a common report. The last stage in the evolution of the farm is usually the payment of the mortgage.

Most of the land near the railroads where it is at all suitable for farming has been occupied for a good many years; the newly settled and unsettled districts are more remote. But accessibility was evidently not the only factor in determining which parts of the county were first chosen for farming, for two of the oldest-settled and richest townships have no railroad within 5 miles of their boundaries.

Although the State conservation commission in its 1909 report estimated that from 75 to 80 per cent of the land area of this county was suitable for cultivation, the 1910 census showed that only 54 per cent was included in farms, and only 35 per cent of this, or less than one-fifth of the total area, improved. Even with the large growth that has taken place since then there is still ample room for new settlers in this northern county.

Type of farming.

Over almost all the county, except on the comparatively small areas of sandy soil, dairying is the main source of the farmers' livelihood. The greater part of the farm land is in meadow or pasture, and the chief grain crops—oats, barley, and rye—are those used for feeding stock. Timothy, blue grass, and clover all thrive; clover does especially well, making good hay for milk production. Even on partly cleared land grass and clover will grow luxuriantly among the stumps; consequently such land can be utilized for pasture before it is stumped and ready for the plow. Milch cows are kept, and milk, cream, or butter is sold from almost every farm in these dairy districts. As throughout Wisconsin, cheese is the most important dairy product, and cheese factories are found in practically every countryside; but proportionately more butter is made here than in the south-

ern county. In 1916 there were 118 cheese factories and 18 creameries (butter factories). Though few of the cheese factories are owned by the farmers, the milk producers are nevertheless commonly paid on the basis of the selling price of the cheese rather than at a flat rate.

In the sandy areas, notably in the Plover River Valley, potatoes are the chief crop. In fact, this is one of the main potato-raising districts of the State, and potato fields of 10 acres or more are common. Yields range from 90 to 150 bushels to the acre, sometimes running as high as 200 or 300 bushels in especially good years; but in the year when the survey was made (1916) the potato crop was an almost total failure. Farmers in the sandy districts also raise cucumbers on a large scale.

Roughly speaking, 80 acres is the standard size for a farm in this county; that is to say, it is the smallest farm on which it is considered that a family can live with reasonable comfort. This does not mean necessarily 80 acres under cultivation, for many dairy farmers manage remarkably well with as little as 20 to 40 acres cleared; but on a "forty" a farmer feels cramped as to his future as well as his present. On the other hand, the owner of more than an "eighty" is on the way to prosperity; farms larger than a quarter section (160 acres) are unusual.

Over one-third of the farms visited in the survey were from 80 to 120 acres in size; and the 1910 census reported the largest number—nearly one-half (43 per cent)—of the farms in the county in the group of from 50 to 100 acres. That the comparatively small size of the farms in this county does not indicate poverty is due both to the fertility of the soil and to the fact that practically all of it can be intensively cultivated as soon as it is cleared.

Farm ownership.

Tenantry is not a problem in this county, for tenants' farms were only 4 per cent of the total number at the last census. In this territory it is entirely possible for a prospective farmer with little capital to become a landowner. But the usual road to that goal is not through renting an already developed farm but through purchasing comparatively cheap, uncleared land under a mortgage and building up its value through the farmer's own labor. This means a hard struggle for both man and wife in the early years, with living reduced to the simplest basis; but such poverty as this is lightened by the hope and prospect of "winning out" to comfort and prosperity.

Rural density.

Outside the city and the incorporated villages, the population of the county in 1910 was 32,378. Since the unincorporated villages are all comparatively small, this is practically the open-country

POLISH WOMEN IN THE HARVEST FIELD.

CABIN IN A POLISH SETTLEMENT, WITH COW STABLE, HAYLOFT, AND DWELLING UNDER ONE ROOF.

THREE GENERATIONS.

A POLISH MIDWIFE WITH HER OWN BABIES.

population and gives a rural density of approximately 20 persons per square mile. This average covers large variations in density between the thickly settled and the sparsely settled districts. Thirteen townships had 25 or more inhabitants per square mile; 1 of these is adjacent to the city and 2 contained unincorporated villages of some importance, while 9 lie in the northwestern section of the county in the region of the older German settlement and within the clay-soil area. On the other hand, 11 townships in different parts of the county had less than 15 inhabitants per square mile; some of these are situated where the land is poor, while others were merely undeveloped. Certain of these latter districts have had a large growth in population since the census year.

Nationality.

The great majority of both the early and the later settlers in this county were German; and over at least three-fourths of its area the county is strongly German in custom, language, and habit of mind up to the present day. There are a few Irish, Bohemian, Dutch, and Norwegian farmers in isolated groups; and in the southeastern quarter of the county there are two important Polish communities. The larger of these, in the Plover River Valley, originated a generation ago as an offshoot of a much larger Polish settlement farther down the river in the next county; this, therefore, is a well-established community. The other Polish settlement is the result of development during the past few years by a land company, which brought comparatively recent immigrants to rough, uncleared land.

According to the 1910 census, the population of the county (including the one city) was 26 per cent native white of native parentage, 52 per cent native of foreign or mixed parentage, and 22 per cent foreign born. For the whole county more than three-fourths (78 per cent) of the natives of foreign parentage had both parents born in Germany, and nearly three-fourths (72 per cent) of the foreign born hailed from Germany. Of course, these figures include the Poles of German origin.

The foreign element, as the census shows, is largely American born; but the Germans and Poles have been so numerous and have segregated themselves to such an extent that they have retained and handed down their foreign characteristics. So markedly foreign is the general atmosphere that the county agricultural extension teacher, upon being asked to name an American township, replied: "All are strongly foreign." Another indication of the persistence of foreign influences is the fact that not only half of all the foreign-born mothers visited in the county but also 16 American-born Polish mothers and 2 American-born German mothers were unable to speak English. In the older Polish settlement, though the majority of

those born in the United States can speak English, it is not at all unusual to find those who can not; and Polish is still to such an extent the language of the family and the church that commonly children come to school lacking acquaintance with the English language.

Social organization.

The foreigners among the farming population are mainly of peasant origin. Consequently, side by side with the advantages of peasant stock—strong physique, industry, and thrift—the community has the disadvantage of the peasant's strong attachment to his ancestral customs. While the rural illiteracy rate at the time of the last census was not excessive—2 per cent among the native born and 7 per cent among the foreign born—the farmers in the strongly foreign townships often do not realize the value for their children of any further education than the district or parochial schools can give. As might be expected, the mothers in these communities know nothing of modern principles of hygiene. Not only ancestral farming methods but also ancestral ways of feeding a baby or of caring for a woman at childbirth are considered fully satisfactory, while "newfangled notions" are viewed with suspicion if not hostility.

To be sure, certain districts are much more progressive than others; in general, the newer communities are the more open to new ideas. With one exception, all the larger villages have high schools.

Cooperative production, as exemplified by the cheese factories of the southern county, has not found favor in this county. In the western third of the county one of the national farmers' associations is well organized and has active locals. In this district cooperative buying and selling organizations are numerous and seem to be thriving; some of these ship and market cattle for their members, while others are engaged mainly in handling feed and flour. There are a few farmers' cooperative stores in other parts of the county, and a cooperative packing plant at the county seat.

This county, in its organized political capacity, has made certain provisions to meet public-health needs that are in advance of the average. To wit, there are a county tuberculosis sanitarium and a county hospital. The latter is located on the grounds of the county almshouse, but is under separate management. It was primarily intended for cases of sickness which would be county charges, but sometimes receives pay cases; it will care for obstetrical patients.

The county also has at the county seat an agricultural school, supported in part by the county and in part by the State. This is open to boys and girls who have completed the district-school course and gives instruction in agriculture, manual training, and domestic science. Although it has been in existence since 1902, it has never had a large patronage. One of the most important branches of the

work of this school is its agricultural extension service—directed mainly toward the improvement of live-stock breeding, through the introduction of pure-bred stock and the formation of cow-testing associations. The extension officer working under the school practically takes the place of the ordinary county agent.

As a whole, it may fairly be said that none of the social-service agencies of the county, except perhaps the district schools, has come into helpful contact with the Polish settlements.

Means of communication.

The map of the county gives the appearance of ample transportation facilities, for the county is served by three main railroads and by two or three short branch roads. Nevertheless, 9 of the 40 townships in the county have no railroad within their borders, and parts of other townships are also remote from any railroad. Because of bad roads, intercourse with the outside world and with other parts of the county is seriously hindered and curtailed in those districts which lack railroad communications.

By reason of the location of the railroads, the county seat is accessible to the central and most of the eastern portions of the county and is the urban center for this area. But the western end, as well as sections along the northern and southern borders, are more accessible to cities in neighboring counties, and their interests gravitate in those directions.

Speaking generally, the roads of the county are poor. Only a few stretches—5 per cent of the total mileage [1]—have been surfaced with rock or gravel. Even what are considered the main roads, though fairly well graded, are for parts of the year almost impassable—those on clay soil in wet weather and those on sandy soil in dry weather. Some of the minor roads, which are the only means of approach to a large proportion of the farms, are so rough that the use of an automobile at any season is practically impossible, and even wagon hauling is difficult. One mother, who lived 7 miles from town at the very end of such a road, exclaimed, when told that the Government was working for the good of the children: "Well, tell them to fix a road through this section so that our children can go to school; it's only a little time of the year that they can possibly get through the swamp and forest."

Large areas were still without mail delivery at the time of the survey, notwithstanding the 31 rural routes then in operation. In the more inaccessible half of one of the townships included in the survey, about 40 families had no delivery service; some of these had to send as far as 12 miles for their mail.

[1] Public Road Mileage and Revenues of the Central, Mountain, and Pacific States, 1914. U. S. Dept. of Agriculture Bulletin No. 389.

Along the western border, telephone lines cover the settled districts reasonably well and most of the homes have telephones; but in the central and eastern sections, the lines do not, as a rule, reach any great distance back from the railroads and villages, or they serve only one important customer in a district—such as a creamery, saloon, or land office—leaving many farms miles away from any telephone. Only 20 of 280 country families visited in these districts reported a telephone in the house; while 120 were 2 miles or more from a telephone; and 40, 5 miles or more. In one township, a third of the families had to send at least 5 miles to reach a telephone, and in another the situation was nearly as bad.

This lack of telephone facilities is keenly felt by many families in these isolated neighborhoods; but, for some reason, the farmers and the company have not been able to come to any agreement as to the terms on which lines should be built and telephones installed.

Industries.

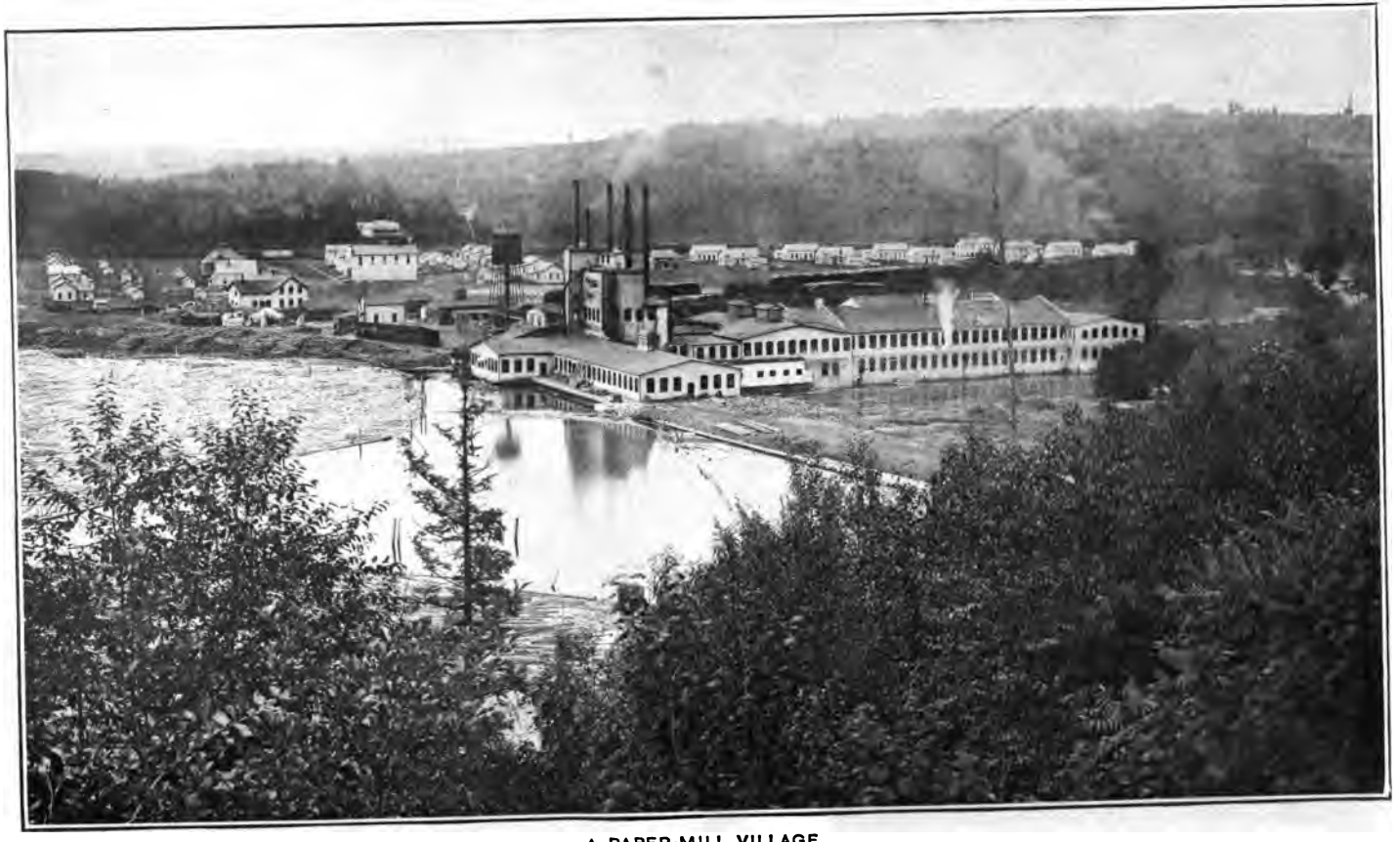
Aside from farming, the chief industries of this district are still those dependent upon the supply of wood. There are still some logging camps in the county, though most of the timber now marketed is brought in by the farmers from their own land. Sawmills providing lumber for local use are fairly common; and in the city there are large saw and planing mills and woodworking factories of various kinds. Away from the city, along the Wisconsin River, are three large paper mills, each with its mill village or settlement; these consume such quantities of pulp wood that they must send outside the county for much of their raw material. A tannery provides a market for hemlock bark.

In the north-central part of the county, on both sides of the river, there are quarries which are said to produce an unusually good quality of granite. But they are a comparatively unimportant factor in the life of the countryside, for they employ only a small number of men.

SELECTED TOWNSHIPS.

In the northern county, the survey covered 7 townships and the 6 villages lying therein. These were selected primarily with a view to representing both the districts where midwives are employed and those where they are not. Preliminary information, furnished by the State board of health or obtained from local sources, indicated certain townships in which at least half the births were attended by others than physicians. From this list 4 townships were chosen in which both the number of births and the proportion of midwife cases were large, and in which other conditions were varied. These townships happened to lie in the central part of the county. Therefore, the

WHERE THE MILK GOES—A COUNTRY CHEESE FACTORY.



A PAPER-MILL VILLAGE.

3 other townships, in which practically all the births were attended by physicians, were selected, 2 from the western border and 1 from the eastern border, in order to cover as far as possible the different sections of the county.

Four of the selected townships are strongly German; one is almost exclusively Polish; one about half German and half Polish; and one of mixed nationalities—Norwegian, German, Polish, and American. One of the important Polish settlements and half the other were included; thus the Polish element was represented out of proportion to its importance in the county as a whole.

Two of the German townships belong in the older and comparatively well-developed districts, though in each there are sections where conditions are still primitive. One of these is counted among the most progressive communities in the county, the other among the most conservative. The other two are in the main more recently settled, with large areas of wild land.

The villages comprised five which are rural community centers, and one paper-mill town which had practically no organic relation to the countryside. In this latter village were found a number of Polish mill hands, though the township in which it lies is German. A second paper mill is located within one of the townships covered, and many of its operatives live near by; but there is nothing which could be called a village. Two of the villages lie on both sides of the county line; consequently, only part of each was covered in the survey.

FAMILIES INCLUDED IN THE SURVEY.

The large majority of the 453 families visited in the northern county lived in the open country; less than one-fifth (87) were villagers.

Nationality.

In the northern county live large groups of persons of German and Polish nationality, who, even when born in the United States, are practically unassimilated. They have retained to such an extent the customs and language of the German and Pole, respectively, that it was thought best, in order to give a true picture of the life and customs of this community, to group them according to their nationality rather than according to their country of birth.[1] The parents in the families visited have been classified in four nationality groups:

1. The native-born fathers and mothers of native parentage on both sides, who for the sake of brevity are referred to as the American group.

[1] The term "nationality" is thus used to designate a racial group inheriting common customs and a common language—its meaning in discussions of problems of immigration. In this sense it has no implications in regard to allegiance or citizenship.

2. The German group, comprising those of German "nationality" born abroad together with those born in the United States whose fathers were foreign-born Germans (the mothers of this group are sometimes referred to as the German mothers).

3. The Polish group, consisting similarly of foreign-born Poles and of those born in the United States whose fathers were foreign-born Poles (the mothers of this group are sometimes referred to as the Polish mothers).

4. The "miscellaneous and other foreign" group, consisting of all others of foreign birth or of foreign or mixed parentage. The last three groups are combined into—

5. The "foreign" group.[1] Where it is necessary to differentiate those born in Germany or Poland or abroad from those included in the "nationality" or "foreign" groups, the former are specifically designated as born in Germany, born in Poland, or foreign born.

Among the 898 parents whose nationality was reported, 162 (18 per cent) were natives of native parentage on both sides (the American group); 359 (40 per cent) were of German birth or parentage (the German group), of whom only 72 were of foreign birth; 273 (30 per cent) were of Polish birth or parentage (the Polish group), of whom 167 were foreign born; the miscellaneous group consisted of 104 persons, of whom 29 were of foreign birth. The foreign born of all nationalities, therefore, formed a little less than one-third (30 per cent) of the whole group, while the native parents of foreign or mixed parentage made up over half the total (52 per cent).

As the figures show, the German was the largest group; it was in the majority in three townships and one village and formed the largest nationality group in another township and village. Even these proportions understate the importance of the German element in the county as a whole, because while both the main Polish settlements were included in the survey, it was impossible to cover more than a sample of the German districts. Four-fifths of the German parents visited were born in the United States.

The Polish group formed the majority in the two townships in which lie the two large Polish settlements; in one of these practically all the Polish parents were foreign born, while in the other most of them had been born in the United States. In this latter community, where all but 3 out of 53 families visited were Polish, 17 native Polish mothers were encountered who were unable to speak

[1] On the schedule the nationality of each of the grandfathers of the baby was recorded. Since in nearly all families both grandparents on either side were of the same nationality, the nationality of the grandfather given on this record was usually that of the grandmother; even when the grandfather was foreign born and the grandmother native she was practically always of the same nationality as her husband. On the other hand, when the grandfather was native but the grandmother foreign born, the specific foreign nationality was not recorded; such cases have been included of necessity in the miscellaneous group. They embraced only 2 fathers and 9 mothers out of the 906 parents included in this study.

English. The husband of one of these women, himself foreign born but with a good command of English, told the agents that he would like to move away from that district in order that his wife might learn English. Nearly all—52 out of 58—the foreign-born women in this county who were unable to speak English were Poles.

Among the mothers visited in the northern county the illiteracy rate was much higher than in the census figures—5.4 per cent for the native born instead of 1.6 per cent and 26.7 per cent among the foreign born instead of 6.8 per cent. These high rates are largely chargeable to the Polish women, for while only 1 per cent of the mothers of native parentage were illiterate, and only 4 per cent of the German mothers, 28 (36 per cent) of the 78 foreign-born Polish mothers and 12 (21 per cent) of 58 born in the United States were unable to read and write in any language.

Father's occupation.

As was to be expected, nine-tenths of the fathers living in the country were engaged in farming. Nearly all these were farmers on their own account; only 7 farm laborers and 2 farm managers were included. Eighteen of the nonfarmers were paper-mill men, most of whom lived in a group in the country near a large paper mill; 5 fathers were cheese makers; 3 worked in the quarries, 4 in the building trades, and 2 at lumbering.

In this county, a large proportion—between one-fourth and one-third—of the farmers found it necessary to eke out their incomes by some kind of supplementary work, as loggers or woodcutters, masons or carpenters, saw-mill or paper-mill hands, or farm laborers. This was especially true of the Poles in the new settlement; since most of them had for the basis of their farming operations only 20, 30, or 40 acres of practically uncleared land, inevitably almost everyone resorted to day labor of some kind. A number of them walked daily 6 miles or more to the nearest paper mill.

The fathers living in the villages represented a greater diversity of occupations—masons, carpenters and builders, blacksmiths and other mechanics, storekeepers, saloon keepers, bankers, laborers, teamsters, etc. The largest group (27) was made up of the paper-mill hands. A few farmers and farm laborers lived in the villages.

Land tenure.

Ten per cent of the fathers included in the survey were tenants. This is much larger than the proportion of farms operated by tenants given in the census reports; to wit, 3.5 per cent. There is no reason, however, to believe that the proportion of tenants was actually greater in the selected townships than in the county at large.

To some extent the apparent difference between the two figures may be due to an actual increase in tenantry since the census date;

but it seems more probable that the chief explanation lies in the fact that the older farmers, who are more apt than the younger men to be landowners, are as a rule not in the count when the fathers of young babies are enumerated.

More than half the landowning fathers were carrying mortgages on their farms and many were newcomers, struggling through the early stages of land clearing. Therefore it is entirely natural that in many of these families as well as in the tenant families expenditures were carefully pruned down to what was regarded as absolutely necessary.

MATERNITY CARE.

Childbearing is an experience which comes often to these country mothers. Thirty-three of those interviewed had borne children twice within the two-year period of the survey; nearly two-thirds (65 per cent) of those who had been married at least two years had borne a child or had had a miscarriage more than once on the average in every two years of their married lives. For 42 of them, this meant 10 or more pregnancies. This condition is reflected in the high birth rate of the rural districts of the county—30 per 1,000 population in 1914 and 1915.[1] For such mothers, injuries from overwork or neglected complications are all the more menacing, because their effects become cumulative.

Availability of physicians.

The American Medical Association directory for 1916 lists 48 physicians in this county, the majority of them located at the county seat. This means one doctor to about every 1,300 inhabitants, which is nearly twice as large a number of persons per physician as the average for the United States (691[2]).

Most of the villages had resident physicians at the time of the survey; but five, including one place of between 400 and 500 inhabitants, had none. This latter was included in the survey; a doctor from the city held office hours there twice a week; but whenever he was needed in an emergency he ordinarily had to come 7 miles by road. There are large areas where a country family may be from 10 to 15 miles from a doctor. It is in exactly these sections that the roads are roughest and most apt to be in bad condition, and that often there is no direct road to the nearest doctor. Some of these neighborhoods which are practically isolated from medical service were included in the territory covered by the survey. Sixty-six of the 395 confinement cases in the open country occurred in families living 10 miles or more from a doctor; for only 8 of these

[1] Twenty-sixth Report of the State Board of Health of Wisconsin, 1916, pp. 316 and 318.
[2] American Medical Association Bulletin, Jan. 15, 1917, p. 99.

cases was a doctor secured. And in this county, outside the villages where there was a resident doctor, only two-fifths of the families were living within 5 miles of a physician's headquarters.

How serious may be the delay in getting a doctor when an emergency arises was shown by a tragic experience of one of those country families, that lived 12 miles from a doctor and 6 miles from a telephone in an isolated district of rough roads. One evening in the winter, when the snow was deep, the 6-year-old child had a nosebleed which could not be stopped. At midnight the doctor was sent for, but he lost his way in the night, had to go back to town, and did not reach the home until 3 o'clock the next day. The bleeding had continued all the while, with the result that the child died just after the doctor arrived. This family—which had seven other children—"never had a doctor in the house" except this one time.

Attendant at birth.

Before the survey was begun it was known that a large proportion of the births in the county were attended by midwives. The investigation showed that the true proportion was even larger than the official figures indicated, because many births attended by midwives were either not registered or registered under the father's name as informant. As has been explained, four of the seven townships, with the three villages therein, included in the study were chosen because maternity care was largely in the hands of midwives. In these townships and villages 50 per cent of the 335 confinements for which records were secured were attended by midwives, while 8 per cent had no professional attendant. In one Polish township, only 5 out of 59 confinements were attended by physicians. In the other districts, where midwives were practically unknown, of 151 confinements 139 were physicians' cases; 3 had no regular attendant; and only 9 were attended by midwives (8 of these in one township). The proportions for all districts together were: Physicians, 58 per cent; midwife, 36 per cent; other attendant or none, 6 per cent.

Of the 28 mothers who had no professional attendant at confinement during the survey period (2 of them twice during the 2 years), 22 belonged to the Polish group, 2 were foreign-born German, and 1 was Indian. Twenty of these confinements were attended by a neighbor, four by the father, three by the grandmother, one by an aunt; and two mothers—one of whom was herself a midwife—delivered themselves, as they had done at six and seven previous confinements. None of this group of mothers was giving birth to her first baby and half had managed with similar informal assistance at previous births. Among the other half who had had either a physician or a midwife at each previous confinement, not a single one had had a physician each time. Five mothers, including the Indian,

but had never had either a doctor or a midwife present at confinement; fact one of these had borne 11 children, one 8, one 7, one 6, and one 3. to Such a situation comes about sometimes without any particular yo choice on the part of the parents, as shown in the case of one Polish family living at the end of an almost impassable road. The father stated that there was never time to go for help because his wife was usually in labor less than an hour; consequently he always tied the cord and cared for the mother. Several mothers in the group reported labor of less than an hour's duration; as one expressed it, the baby "came alone," or as the Polish women say, "it was born in two pains," with the consequence that "there was no one on hand but a neighbor," and sometimes even the neighbor was late. With the majority, however, there was doubtless an element of deliberate intent in the situation, even if unacknowledged. Among the Poles especially the opinion is not uncommon that a mother should be able practically to deliver herself, and that a physician is not only superfluous but even undesirable. One father stated vehemently: "I would not let a doctor come near my wife." His wife, who had borne eight children, said that she always delivered herself, cut the cord, and washed the baby before going to bed, calling only upon a neighbor or her husband to hand her supplies. That such a practice can not be counted upon for safety even when everything has repeatedly gone well is exemplified by the experience of this same mother. At her ninth confinement, which followed almost immediately after the agent's visit, spontaneous delivery was impossible because of a face presentation; after she had been in labor three days, the doctor had to be summoned to turn the child.

One of these women, who had lived all her married life within 2 miles of a doctor, had tried all kinds of obstetrical care in the course of her 20 years' experience. She had had 3 miscarriages and had borne 15 children. Two of the children were stillborn; both these births—instrumental deliveries following protracted labor—were attended by physicians. Two other children had died before they were a day old, and a third at 8 days; all these were delivered by physicians, in one case after 2 days' labor. Of the 10 living children, 4 were delivered by a doctor, 2 by a midwife, 1 by a neighbor, and 3 by the father. Two of the babies (including the last), who were ushered into the world by their father, were born after very brief labors.

In the cases of 23 mothers who are counted as physicians' patients, the doctor did not arrive until after the birth had occurred, sometimes only a few minutes late but occasionally as much as two hours. In the majority of cases these doctors had to come 5 miles or more, sometimes over bad roads; only one of these births (a protracted labor which suddenly terminated while the doctor was away) oc-

curred in the doctor's home town. Most often, some neighbor or relative who was present tied the cord and attended to the baby; but in a few instances this was left for the doctor. One mother reported that her baby "just laid till the doctor came" and apparently suffered no harm by the two hours' wait. Usually the doctor examined the mother and baby after he arrived; thus the mother was to that extent protected from complications. Occasionally, however, a story was told of a doctor who came late and neither looked at the baby nor examined the mother.

In some instances the attendant midwife also failed to reach her patient on time. Naturally this happens less often in a midwife's practice, both because she is apt to be closer at hand than the doctor and also because she seldom has other patients to delay her.

Hospital confinements.

In the northern county there are two general hospitals at the county seat, one of 60 and one of 24 beds. These and the county hospital are available for obstetrical work; a large hospital just outside the county line is easily accessible to the people along the western border. At the worst, in order to reach one of these hospitals, a railroad journey of several hours might be necessary for the people near the eastern border, since the connections are poor; and in the isolated districts it might take two hours or more if the roads were bad, to reach the railroad.

In spite of facilities near at hand, the only mother included in the survey who was confined in a hospital went to Milwaukee—not as an emergency measure but as an insurance against possible difficulties. However, hers was a notable exception to the general attitude on this subject. By most families in the county the idea of going to a hospital for confinement would undoubtedly be regarded as preposterous; certainly it is almost never done.

Obstetrical service by physicians.

The use of obstetrical forceps was much more frequent in this county than it was found to be in the Kansas survey. In 10 per cent (48 cases) of all the deliveries included in the survey instruments were used, instead of in less than 5 per cent as in Kansas; this was 17 per cent of the confinements attended by physicians in the selected districts. Twenty-one of these forty-eight cases were first births, seven were stillbirths, and one child died within the first few hours. No physician used the forceps in any large number of cases; but if the doctors who had the most cases in the area of the survey (at least 10 cases each) are grouped according to their use of instruments, it develops that out of 86 births attended by one group only 5 were instrumental, while among 49 attended by another group, 13 (over one-fourth) were forceps cases.

One of the great difficulties in rural obstetrical practice is the matter of waiting for normal dilatation. A physician in general practice may have other patients critically ill or may have other impending obstetrical cases; and it is very difficult for him to go miles into the country, many times entirely away from a telephone, and to wait 10 or 15 hours or more for nature to take her course. The saving of time effected by the use of instruments is a great temptation.

The large majority of the lacerations recognized by the mothers had been repaired, though in a couple of cases the operation had been unsuccessful. But four mothers reported what they considered severe lacerations which had been neglected by the attending physician. A few other mothers felt strongly that they had suffered from the doctor's carelessness at the time of confinement.

Nearly half the country mothers attended at confinement by a physician were never revisited after the baby was born, and only one-fifth received more than one subsequent visit. This is practically the same situation as that found in the lowland county in North Carolina, but somewhat worse than in western Kansas or in the southern part of Wisconsin (see p. 63). Evidently the vital importance of postnatal supervision is not recognized in any of these country districts. Since postnatal visits far out in the country are difficult for a busy doctor to make, as well as expensive for the family, there is every incentive to take for granted the safe progress of mother and baby; but this is doubly dangerous in districts where even telephone messages are hard for the family to send. That the lack of "after care" is not due wholly to inaccessibility is indicated by the fact that out of 35 mothers attended by physicians in villages where there was a resident doctor, 7 (one-fifth) received no postnatal visits and 10 received only 1.

Midwives.

The midwife is a factor definitely to be reckoned with in a study of maternity care in this county. As has been mentioned, a large proportion of births in certain communities were attended by midwives; in all, records were secured for 175 midwives' confinement cases. Because of the importance of the problem, it was decided to secure directly from these women certain additional facts about their training and methods.

In classifying the attendant at birth, any woman who was considered by the neighborhood competent to take the responsibility for delivering a child and was engaged for that purpose was counted as a midwife. Twenty-four women were so classified; some of these attended only one or two of the births included in the survey, but all had had considerable experience and were looked upon as part of the neighborhood's resources in providing for childbirth. Of the 24 midwives included in the list, 6 had each delivered 10 or more

children for whom schedules were secured, while 2—1 German and 1 Polish—delivered each more than 30. A number had a much larger clientele than the schedules indicated, even during the survey period, because they practiced outside the territory covered by the survey.

As thus used the term "midwife" does not necessarily imply training or legal status. Of 14 midwives concerning whom the information was obtained, only 2 had attended a training school of any kind, though several had been taught by physicians and worked under their supervision; and only 2 out of the whole list of 24 held an official certificate entitling them to practice.

The Wisconsin law provides that no midwife may practice for pay without a certificate of registration, issued by the State board of medical examiners; the requisites for such certificates are (1) presenting a diploma from a reputable accredited school of midwifery, together with evidence of good character, and (2) passing an examination given by the board.[1] In Wisconsin there is no school of midwifery known to the authorities; consequently only women trained outside the State can qualify for the examination.

Only two of the women who were found to be acting as midwives were reported by the State board of medical examiners as registered. These were both professional midwives living in the city and taking occasional cases in the country; the two attended only 3 out of the 175 widwife cases included in the survey. It is only to be expected that women living in isolated neighborhoods and attending perhaps only two or three confinements a year, should not trouble to secure certificates. But that midwives with large practices should fail to do so is a more serious matter. From the midwife's point of view, there are several reasons for this. One woman, with a large practice and good training, was ignorant of the necessity of a State certificate, considering her diploma all sufficient. Others knew that they were debarred because they had no diplomas to present, having never attended a school. Yet others feared the expense and trouble of going to Milwaukee or Madison for the examination; to poor, illiterate Polish women who could not speak English such a prospect naturally seemed appalling. And though most of these women were aware that a "license" was required—and were therefore chary of admitting that they received pay for their services—they had practiced unmolested for so long that they felt under no necessity to comply with the law. Certain of these unregistered midwives had filled out birth certificates in their own names for years.

In part, the employment of midwives seems to have been a natural—almost an inevitable—result of the isolation of many of the early settlements and of many neighborhoods at the present day,

[1] Statutes 1917, secs. 1435b, 1436f-12, and 1436f-13.

making it expensive and often practically impossible to secure a doctor. Under such circumstances it frequently happens that one of the neighbor women who are called upon to help in emergencies develops special skill in such work and soon finds herself more and more drafted into service. In these communities the women are often in labor only a short time—a few hours at most—and deliveries usually proceed without difficulty. If thrifty pioneers have once had the experience of paying the bill of a physician who arrived too late to be of any service—at least so it appears to them—they are apt to choose a neighboring midwife for the next occasion. When to such conditions come settlers like the Germans and Poles, who have been accustomed to the services of midwives in "the old country" and prefer them to physicians, midwifery is likely to become an established institution.

A few of the midwives encountered in the course of the survey made their living by the practice of midwifery, but the majority "went out" mainly as an accommodation to their neighbors. They were farmers' wives, living in sparsely settled districts where there would not be enough obstetrical cases to support a professional midwife. Some who had previously been in active practice would have preferred to give up such strenuous work as they grew older; only, as one elderly Polish woman said, "If I go not, what becomes of the women?"

Half the midwives were Polish women practicing in Polish settlements; nearly all the rest were German. Midwives attended 31 per cent of the confinements of German mothers and 61 per cent of those of Polish mothers, while only 16 per cent of the births to American mothers of native parentage were in the hands of midwives. Polish immigration is so recent as compared with the German, and the Polish people have mingled with other nationalities so much less even than the Germans, that it is not surprising that the Polish women have clung more tenaciously than the German to the old-world custom of employing midwives. From all accounts it seems probable that the midwife was as commonly employed in the German settlements a generation ago as she is to-day in the Polish settlements. The really surprising fact is that Polish mothers born in America employed midwives much more and physicians much less than did the immigrants, though they were less likely to go without any attendant. Why this should be is not clear. Inaccessibility of physicians could not have been the chief cause of this difference, for they were about equally inaccessible to the two chief settlements. Several of the foreign-born Polish women who employed a physician had to have a version or an instrumental delivery performed; others had had difficulties at previous confinements which made them anticipate the necessity for a doctor.

As a general proposition there is no question that the difficulty of securing a doctor is one of the important factors leading to the employment of midwives in the country districts. In most of the communities studied the midwife was a neighbor of her patrons and was employed in preference to doctors who were a long distance away. Taking all the selected districts together, three-quarters of the midwives' patients were 5 miles or more from a doctor, while three-fifths of the doctors' cases lived within 5 miles. Where there was no doctor within 10 miles, a midwife was employed in three-fourths of the confinements and in another one-ninth there was no regular attendant. But in the country where there was a physician within 5 miles, a midwife was employed for only one-eighth of the confinements.

The greater convenience of securing a midwife in isolated neighborhoods does not explain the whole situation in the county, however, for a midwife was employed in over one-third of the village cases where there was a doctor in the same village. One of the German midwives living in the city told the agents that she had sometimes driven as far as 30 or 40 miles out into the country to care for women at childbirth. And in one of the German districts included in the survey the midwife, who depends upon her work for her livelihood, lived in the village where there were three doctors and was called upon both in the village and in all the surrounding townships in preference to these doctors. She had practiced in that neighborhood for 20 years. In the village she attended two-thirds of the births scheduled and in one of the adjacent townships nearly half; the majority of her patients were German, but a number were American of native parentage. One of the village physicians, when asked how it happened that the doctors did so little of the obstetrical work, replied: "Well, to tell the truth, it is largely our own fault. We don't like that kind of work and have always more or less turned it over to Mrs. M."

Mrs. M. was a well-educated woman, with a diploma from a school of midwifery; she gave the impression of being both cleanly and capable and had that reputation with the local doctors also. She said that she used carbolic-acid solution in cleansing her hands and in preparing the mother. She sometimes made several examinations during labor, but "sometimes there is not time to make any." She gave douches of "plain water," but boiled the apparatus each time. She carried a bag with cotton, gauze, umbilical tape, two syringes, and a supply of carbolic acid.

Among her patients she was highly esteemed; some of them she had attended at every childbirth—six, seven, or eight times—as long as they had lived in her territory. One of her regular patrons ex-

plained the attendance of a physician at one birth by saying that she "wanted Mrs. M. that time but could not get her." More than one mother "tried a doctor once" and had the midwife every time afterwards. Mrs. M. frequently acted as nurse when a physician was in charge of the case. One or two mothers had her as nurse until the last confinement, when, because the doctor could not be secured, the midwife took charge. She was apparently careful to call a doctor when anything seemed to her to be going wrong, and almost never failed to do so in case of a miscarriage.

Mrs. M.'s ordinary charge was $5. She expected her country patrons to furnish transportation and did not ordinarily revisit unless they sent for her; in the village where she lived, however, she customarily made two daily visits for 9 or 10 days. Naturally her village patients were enthusiastic over the service secured; one of these mothers said that she liked the midwife much better than a doctor, "she does lots more for you." She gave no prenatal supervision to her country patients, but occasionally "dropped in" to advise those living in the village.

Typical of the German neighborhood midwife was Mrs. R., whose family homesteaded 40 years ago in an isolated neighborhood 9 or 10 miles from town, where they still live. Her first three children were born in Germany, under a midwife's care. On the Wisconsin clearing eight more were born; she never had a doctor in the house for any cause during all those 40 years; and at childbirth sometimes had not even a neighbor's assistance. She brought with her from Germany a textbook on midwifery, and soon became the neighborhood's mainstay for care at childbirth. At one time she held a State certificate but allowed it to lapse. She did not like to discuss her practice or methods—she speaks no English—but said that in all her experience in that neighborhood she had known of only one stillbirth and no maternal deaths at childbirth.

Records were secured of 16 births which she had attended during the two years of the survey, of which 5 were her own grandchildren. She was then 65 years old, and said that she did not want to "go out" but the neighbors would not let her alone. No one would admit that she made any charge, but "we just gave her something," usually about $2 or $3. She rarely saw her patients in her professional capacity either before or after confinement, even when the baby was her own grandchild.

Of a different type was a much younger woman who had a large practice in one of the paper-mill villages, 7 miles from a resident doctor. She began her work casually, through being summoned in an emergency to help the doctor from the city. He thought her so capable that he called upon her frequently after that, and before

ended her as able to do as well for these women as he several years before her death the large majority of the village were in her hands. She studied assiduously it to a hospital in Chicago for a few weeks. Of all the e gave the most attention to her patients—advice dur- y as well as care during the puerperium—and seems to lly devoted to the work and to her patients. She in- er patients stay in bed 10 days; during that time she sits daily, bathing mother and baby and doing every- e to make them comfortable. Sometimes she even took ashed the soiled linen "so as to have something clean em the next day." For all this service she charged $12

1 midwives, as a class, gave the impression of being eanly than the German ones. But some of them seem loped skill in their work and to be remarkably success- hboring doctor with a large practice among the Poles gents to try to get one of these midwives to "wash her nally"; but almost in the same breath he acknowledged never known a Polish woman to get a puerperal in-

1 midwife, herself an immigrant, delivered more than ies born in the recent Polish settlement; most of her garded her as indispensable to their safety. She was until labor began; many were the tales of her running to "be on time for the baby," since neither she nor her . horse. She practically supported her family through in the fields and among the neighbors, for her husband abled by an accident in the mill. When her patients walking distance she usually made one or two visits a he lying-in period and sometimes did the absolutely sework. Her statement as to compensation was: "Some- s, sometimes $2, sometimes $5, sometimes they forget to ." She had no schooling and no formal training, but some traditional midwives' lore from her grandmother ked under a physician's supervision in another State g to Wisconsin. She said that she used carbolic acid in h which she washed her hands.

er Polish settlement the obstetrical practice was divided nber of neighborhood midwives, most of them old women e. Four of them were interviewed. All were crude and their methods, without any training for their work; ac- heir statements they carried no equipment; and, with the one who had a bottle of bichloride tablets give

by a doctor, they made no pretense of using antiseptics. Before making an examination they all "washed their hands and greased them with lard or any grease they had." All claimed that they called a doctor whenever complications appeared but that the necessity seldom arose. However, a patient of one of these women—her own daughter-in-law, from whom a schedule was secured—was allowed to be in labor three days with what was probably a breech presentation before a doctor was called. Only one made a practice of revisiting her patients. One charged $2, the others took "what they give." These four women together probably cared for about 40 cases a year.

Seldom was the midwife consulted during pregnancy; in only one-seventh of the midwives' cases did the mother see her attendant until labor began. Only one midwife gave her patients any considerable prenatal supervision. On the other hand, nearly two-thirds (65 per cent) of the midwives' patients were visited after confinement, in contrast to a little over half (54 per cent) the physicians' patients; half the midwives' patients (89) received at least two postnatal visits. The case is, of course, not exactly parallel with a doctor's practice, because the midwives who made more than one visit to their patients after confinement were really acting in the capacity of obstetrical nurses; moreover, the midwives usually lived closer to their patients and seldom revisited unless they did live near.

No one of the midwives interviewed used instruments or anæstheties, or repaired lacerations. They seldom interfered with the expulsion of the afterbirth; without exception they reported that it was their custom to wait for it to "come" naturally. As a rule, they used common twine to tie the cord. All stated that they called a physician immediately if they recognized an abnormal condition. However, it seems fairly certain that at least some of them were willing to perform versions.

Among the 178 births attended by midwives for which records were secured, there were 4 stillbirths and 6 deaths under 2 weeks of age. There was 1 maternal death, due to sepsis developing about a week after confinement.

Nursing care.

In none of the districts studied was there a resident trained nurse; but families in the central part of the county could secure trained nurses from the county seat. One of the hospitals gives a nurses' training course, and there are said to be about 18 trained nurses located in the city. Two country mothers—in addition to one who

went to the city for confinement and the one mentioned who went away to a hospital—had trained nurses at the time of childbirth; one of these nurses was the mother's sister; thus only one was employed.

In this county the practical nurse was replaced in the midwife districts by the midwife as a semiskilled childbed nurse. Of 486 confinements, 24—practically all in communities where there were no midwives—were nursed by practical nurses and 93 by midwives, giving together a proportion of about one-fourth who had semitrained nursing care. In 86 out of these 93 cases the midwife was the attendant at birth as well as the nurse. As has been said, these women seldom remained in the home or did the housework, but rather made visits once or twice a day.

The remaining three-fourths of the mothers did as most country women do at childbirth—depended upon relatives or neighbors for their nursing care. It is difficult to see how the great majority of country mothers would manage if they could not call upon their mothers and sisters for help in such emergencies. There are not nearly enough nurses of any grade to do all the childbed nursing in any of these country districts in Wisconsin; and, aside from the difficulty of securing hired girls, those who can be secured could hardly be trusted to give as conscientious care as the mother's own "folks." Of course hardships sometimes occur, as in the case of one mother who was left to care for herself and her baby for two days, with only a daily visit from a neighbor. On the third day she became seriously ill; then her mother-in-law and the neighbor "stayed a day and a night, and worked over her all day"; but after the fever subsided she had to care for herself again.

Prenatal care.

Less than one-fifth (19 per cent) of the mothers attended at birth by physicians had any medical care or supervision during pregnancy; only a very few (9) who were attended by midwives came under a doctor's care during pregnancy. In the districts covered, in only one-eighth of the recorded pregnancies did the mother have any medical prenatal care. In the villages nearly one-third of the mothers who had a doctor at childbirth had some care from him during pregnancy; but in the country only 1 in 6. As was to be expected, the mothers of the foreign group sought medical care during pregnancy much less than mothers of the American group; one-fourth of the native mothers of native parentage had prenatal care, but only one-eighth of the German mothers, and only 1 in 50 of the Polish mothers. Taking the three foreign groups together only 1 in 32 of the foreign-born mothers and approximately 1 in 10 of the native women of foreign parentage had any prenatal care.

Nursing

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childbirth occurred in the The causes of death were pregnancy," "puerperal em- Two of the three were doc- septicemia was attended at became ill after having been a week, and then called in a after two operations. Her could not be secured for the of toxemia, because the family twins at that time. The third pregnancy, but had a difficult hemorrhage, which her hus- Her baby was stillborn. 17 deaths outside the city from the period of the survey. There this period, which gives 7 mater- when the estimated population 42,500, there were 8 maternal a maternal mortality rate of 19 slightly higher than the rates for death-registration area of the the registration areas are, in their certain foreign countries.[3]

MOTHER'S WORK.

and after confinement.

of the mothers visited remained in bed for the cus- of 10 days; more than half, however, were in bed less and only one-fifth longer than the 10 days. In fact, (over one-fifth of the total) were up from bed in less 45 of them in less than four days. This state of affairs

usually stated on the number of maternal deaths per 1,000 live births, but of live births could not be accurately determined, the rate is stated as per 1,000 registered live births and still births. Owing to the probable omission from registration, the number of registered live and still births prob- somewhat short of the total live births in the district for the period of the

15, in the death registration area of the United States, the death rate from puer- was 6 per 100,000 population, and from other puerperal affections 9, giving for causes connected with childbearing of 15 per 100,000. Mortality Sta- 15, p. 59, U. S. Bureau of the Census. in the rth-registration area the death rate for all causes connected with was 6. per 1,000 live births. Computed from Birth Statistics, 1915, and Statistics, 1915, published by the U. S. Bureau of the Census. Dr. Grace : Maternal Mortality, Table XII, p. 56. U. S. Children's Bu No. 19.

safety, either on her
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e last two weeks before confinement; most of these mothers
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d girl during that time. Almost twice as many—one-fifth
l—did not do their washing and ironing in the last two
only a small proportion discontinued even this heavy work
e last three months of pregnancy.
ion to the few mothers who kept a hired girl regularly,
s the mother had hired help with the housework during
l period; this is not quite two-fifths of the total.

sework.

farm homes the indoor work is simplified to the last
e floors are bare or covered with linoleum; the articles
are few and plain; there are few curtains or ornaments.
dining table is covered with oilcloth and stands in the
veniently near the cookstove. Even in the matter of
tensils there is economy. The everyday clothing is apt
haracter which requires the minimum amount of wash-
ing. In some country families the amount of washing,
cleaning actually done is small. These facts must be
in estimating the burden which farm women are called
. The woman who tries to maintain a more elaborate
standard and also meets the farm's demands upon her
n breaks down under the strain.
country mothers and seven village mothers among those
hired girl for the greater part of the time.
f the mothers visited had had five or more children.
f the survey nearly half had households of more than
ddition to the baby; about one-seventh had more than
; and families of 12 or more were sometimes found.
larger households, of course, contained other adults;
l family consisted of the parents and three or four
. A family of this kind, where none of the children
o be a real help, makes as much work for the house-
r one with older children.
ies were more common in the country than in the
n where the families were largest the houses were
farmer who is engaged in clearing cut-over forest
y can not build a commodious house until long after
s outgrown the original cabin. The resulting over-
rikingly shown in the figures. Two or more persons—
the baby—to every room in the house may surely be
rcrowding; and while few village families—less than
ed this condition, 1 in 4 of the country families w-
r more persons to a room. Such a state of affairs m

Aside from sewing machines, which were common in both farm and village homes, the one mechanical labor saver possessed by a large number of rural families is the washing machine. In this county, however, only about one-fourth of the mothers in the country and one-fifth of those in the villages had a washer. Twelve country mothers, and two in the villages had their washing machines run by engines.

A little intelligent care in planning homes would make work much easier for the housewife. Houses are commonly built upon high, damp-proof and frost-proof foundations. It almost never occurs to the builder to locate the pump on a porch or platform level with the kitchen floor. Fuel also is stored in a heap some distance from the house, or in a separate woodhouse if it is sheltered. The cellars often have no inside door, hence every trip to the cellar involves going outdoors.

Boarding hired men.

Dairy farming has no such "rush season" as have other types of farming whose main output is some one crop such as cotton, corn, or wheat. The dairy farm has, it is true, a busy time when its chief homegrown feed crop—hay or corn or whatever it may be—is harvested; but the bulk of the work, the care and feeding and milking of the herd, goes forward steadily day by day throughout the year. One result of this is that the labor force must be kept nearly uniform through the year; if hired men are needed, they are apt to be kept on hand all the time; and it is often possible for the family to manage the work without outside help.

The small farms of the north country seldom require hired labor. Consequently only 95 mothers out of 327 whose husbands were farmers or farm managers boarded hired men during the time covered by the records, while 40 had hired men as usual members of their households. In a number of cases these men were carpenters and masons rather than farm hands, for house and barn building was often in process. Having a regular hired man ordinarily involved doing his washing as well as providing his bed and board, but this would not usually be the case with builders or temporary help.

Work for the dairy.

Dairy farming, however, has disadvantages for the housewife as well as the advantage of relieving her of harvesting crews. In the first place, it almost invariably—at least on these Wisconsin farms—burdens her with the care of the dairy implements, pails, cans, and separator. The milk pails are always on hand to be washed and scalded. The sale of cream is probably the method of disposing of dairy products which is usually easiest for the housewife, since cleaning the separator, though troublesome, is not heavy work. On

the other hand, if she is called upon to operate the separator as one of her chores she does hard work, requiring much muscular effort. Next in order comes the sale of whole milk, which removes the separator but substitutes numerous 10-gallon milk cans—heavy, awkward objects to lift and clean. This is the form in which milk is most commonly sold. A mother who washes cans for a 10-cow dairy farm up to the time of confinement and begins again two or three weeks afterwards, as did many mothers in the northern county, runs a decided risk of injuring herself. Last, and most arduous for the housewife, comes the sale of butter. This involves a separator to clean and perhaps to run, the care of the cream and its storage vessels, usually the churning, and almost always the butter to "make up," even if someone else runs the churn. Many mothers in this county made butter for sale. About one-third of the farm women (103) stated that they churned and made butter either for the family's use or for sale. The usual type of churn was the rotary or barrel churn, but a considerable number still used a dasher churn.

Milking.

The women commonly helped with the milking; among the German and Polish families, if the herd was small, the milking was apt to be left entirely to them. Three-fourths (256) of the farm mothers milked; and most of those who milked during pregnancy kept it up until the time of confinement. One Polish mother got up to milk her cow on the fifth day after her baby was born and then went back to bed again for two days.

Other chores.

The care of the garden and of the chickens was the commonest form of outdoor work done by the mothers. More than three-fourths of all the mothers, both in the country and villages, worked in the garden. The care of chickens was an almost universal duty but did not usually mean a great deal of work, because most families raised only chickens enough for their own use.

Many mothers cared for the pigs and calves, and a few for other stock, but this was not an important part of their work. In the newer districts some of them had to chop or saw the household supply of firewood in addition to a multitude of other tasks. Nine did this up to the day the baby was born and one started in again a week afterwards.

Field work.

In half (168) the farming families the mother reported having done more or less field work during her last pregnancy or the year following. Such work ran the whole gamut from "raking a little hay" or "driving team for the unloader" or "picking potatoes" to

"planting, hoeing, and digging potatoes, cultivating and picking cucumbers, cutting corn and oats, carrying oat sheaves into the barn, and sawing stove wood," or "raking and loading hay, hoeing and digging potatoes, cutting and grubbing brush, pitching rocks, and cutting stove wood and pulp wood for sale"—in addition, of course, to milking, gardening, caring for chickens, and all the housework.

In the main the women who did field work belonged to the German and Polish groups. Furthermore, though many German women helped in the fields, few of them did anything like the amount and variety of field work which was the common lot of the Polish women. On the small farms of the recent Polish immigrants it was a usual arrangement for the women to do the bulk of the farm work as well as much of the land clearing while the men worked away from home for wages. It was a common sight in harvest time to see a group of these women helping one another in the field, often cutting oats among the stumps with hand sickles. A few of these Polish mothers even cut cordwood, at $1.50 a cord, to provide the necessary groceries for the family, while the husband's wages went to meet the mortgage or the doctor's bill.

Undeniably a moderate amount of outdoor exercise is good for most women; and probably many women can do strenuous outdoor as well as indoor work without injury if they have been accustomed to it, as most of these northern farm women had been from girlhood. But it must be borne in mind that the records under discussion deal with a special group of women, each of whom had borne a child during the period which the record covers. For such women the possibility of injury from heavy work is closely connected with the question of how near it came to the time of childbirth. When a mother rakes hay on the day her baby is born and again eight days afterwards, the question of risk of injury assumes a different aspect from that which it would have at another time.

Field work has the additional disadvantage of depriving the baby of his mother's care. These hard-working country mothers almost always managed to nurse their babies, either taking them along to the fields, or more commonly returning to the house when necessary; but in the intervals a young baby was often left in the hands of children hardly old enough to meet such a responsibility. One baby was said to have been fatally injured by being dropped by an older child who was acting as nurse. Another Polish baby was burned to death while his mother was out helping her husband in the woods; the other children ran out from the burning house, but left the baby in his cradle.

Inevitably most of the field work done by these mothers, such as planting, haying, harvesting, gathering potatoes, had to to be done when the crop called for attention, without regard to the conven-

ience of the worker. As one overworked mother remarked, "the work has to be done." It would not be surprising, therefore, to find that mothers whose babies were born in the summer had helped with the rush work close to the time of childbirth. As a matter of fact 36, the majority of whom were Polish, reported having worked in the fields within four weeks of confinement; considering the urgent need for the women's help on many farms, this is not a large proportion, but from the point of view of the safety of mother and baby the matter is seen in a different light. Nineteen of these mothers worked up to the day of confinement; five were in the fields in a week or less afterwards.

On the whole, the urgent work like haying and harvesting grain was responsible for less of the work done near the time of childbirth than was work like tending the potato crop or clearing land, which is less pressing at any particular time. The probable explanation of this fact is that the latter class of work was common only among the Polish women, who do not plan to spare themselves during pregnancy, while the women of other nationalities, who often help with the rush work, would not usually do this close to the expected time of confinement or soon afterwards.

Haying time is the season of greatest work pressure on the dairy farms of this section of the country. It ordinarily comes in July and lasts from two to four weeks; immediately thereafter comes the grain harvest (oats, rye, barley), making with the haying a busy season of about two months. But the farms of this county produce so much more hay than grain that haying brings much more work than harvest. And in this northern country the mother would often go into the hayfield herself if help were needed. On many a small farm the farmer and his wife and children managed the haying together, with no outside help.

Three-fourths of the mothers who did any field work helped with the haying. Mostly they raked or shocked, or drove the wagon or the unloader team, or stood on top of the load to pack the hay as it was thrown up; some women, however, did all work at haying, including loading and unloading, pitching hay on and off the wagon. With the mothers of the German group haying was the most common field task, and half the 62 who reported working in the fields did no other field work. In spite of the fact that haying is usually a "rush job," involving a serious loss if the crop is not attended to promptly, only 10 mothers worked in the hayfield within a month before or after confinement; four of these worked up to the last day before the birth.

Haying and harvest work are commonly regarded as one continuous task; thus a mother would report in one phrase that she "drove team for haying and harvest" or "pitched hay and grain"

or "helped with all work at haying and harvest." Nevertheless, only about half as many mothers (56) worked in the harvest as at haying; over half these harvesters were of the Polish group. They took part in all the necessary occupations—cutting, raking, binding, shocking, loading, and unloading, and especially "driving team." Only two mothers helped with harvesting up to the day of confinement.

Next to haying, work with the potatoes was the commonest field task. Mothers reported tending the potato crop through all its stages, from planting, through hoeing, spraying, and "bugging," to digging and picking. Planting and digging are the heaviest work, and were reported by 75 mothers. Since the Poles are the chief potato raisers of the county, it is natural that the majority of Polish mothers who did any field work worked "in the potatoes." For only a few of them, however, was this the only task; the usual report included haying and harvesting and clearing land as well. Eight mothers worked with the potato crop up to the day of confinement, and five began again in a week or less afterwards.

In the pioneer districts many mothers also helped clear the land—cutting brush, grubbing roots, picking and pitching rocks, and even pulling stumps. All this is heavy work but not especially rush work. Of similar character are the various lumbering tasks reported by a few mothers, who even cut and skidded logs, or cut and piled pulp wood and cordwood for sale; in the Polish settlement cutting and bringing in the stove wood was commonly a woman's job. Preparing the fields—plowing, driving drag, handling manure—was work which the women were seldom called upon to perform.

Of the other miscellaneous tasks reported, one of the most arduous, because of the constant stooping, was picking cucumbers—a common crop in the sandy areas. The mothers who cared for the ginseng bed, who pitched pea vines, or who made maple sirup for four weeks in the spring, represented unusual phases of farming for this district.

How all this work may affect the life of the individual mother is illustrated by the following stories:

A Polish family of mother, father, and two children lived on a clearing of 7 or 8 acres back in the woods 8 miles from town. The mother did her housework and cared for her chickens and pigs up to the day the baby was born, in September, and dug potatoes a week before, in spite of frequent fainting spells and a "bad" leg; during the preceding summer she cut brush, stove wood, and pulp wood, picked stones, hoed potatoes and garden, and raked and loaded hay. She said that the farm work, which she never had done until she came to the country three years before, was easy for her except when she was pregnant; but then it was hard. Her husband nursed her and the baby—except that she bathed the baby—and did the housework for a week; after that she got up and cooked the meals, one week

[illegible]

separator, worked in the garden, and cut cordwood and brush until the last day. Again she stayed in bed only three days, with her husband as nurse, and immediately thereafter began to cook, care for the house, and milk. Four days after confinement she worked in her garden and planted potatoes in the field; a week after, she did the washing and ran the separator; six weeks afterwards she was working in the hay field. She had done farm work practically all her life in Poland, beginning at 14 to do heavy work like spading, reaping, binding, and loading grain. She said that her work had never injured her in any way.

A German mother, living on a 20-acre clearing near the end of a rough "blind-end" road 13 miles from town, drove team at haying and harvest, shocked hay, and bound oats every summer. Her fourth baby was born early in September, two weeks after she ceased her work in the fields—and she complained of being "weak in the back" that summer. The next baby was born in April of the second year and was 3 months old before his mother went out to work "in the hay." She stayed in bed only three days each time, though she had a hired girl for a week. After the last confinment she began to get the meals as soon as she got up; she washed, milked, churned, and made butter after two weeks, with the help only of her 7-year-old daughter. The time before, she did all the housework after one week but no outside work, except tending the chickens, until spring.

A German mother, living on an 80-acre dairy farm 16 miles from town, had four small boys, the oldest 10. She said that she always helped with all the work on the farm—it had to be done. All through her last pregnancy, which terminated just in haying time, she was badly nauseated and miserable generally; yet up to the last day she milked five cows, made butter for sale, cared for her garden and chickens, and made hay. She had some fever after confinement but got up the fourth day, when her mother left, and did her housework; the next day she milked; a week after confinement she washed, churned, and began to look after her garden and chickens. When the baby was three weeks old she was again doing "all work" on the farm; haying was then over, but harvesting was in full swing.

A German mother with two small children lived on a 40-acre farm, of which about one-third was cleared, in the sandy country. Before the third confinement (in September) she was troubled with headaches, varicose veins, and swollen hands and feet; but she kept up all her housework and chores—milking and feeding two cows and tending chickens—and cut corn the last day. Two weeks before, she had hoed potatoes and a week before that picked cucumbers. She had a neighborhood midwife at confinement, who washed the baby the first time; the father did the housework for one day. On the second day after confinement the mother got up, washed the baby, and cooked the meals; one week afterwards she was churning, milking, and looking after the stock; but she had the washing done twice. When the baby was 5 weeks old she went to the field to dig potatoes. This woman had never done any farm work until the family came here six years ago to uncleared land, and she said that it was too hard for her. At the time of the interview she was "nearly used up" from picking cucumbers in the sun.

A German mother with six small children did all the housework with the help of the two older children—girls of 8 and 10. Her next baby was born in the winter, at the season when there were two hired men on hand to help with the logging. During the winter the mother felt miserable and did no outdoor work except to care for the chickens. But in the summer and autumn, both the year before and the year after confinement, she planted, sprayed, and dug potatoes; in the summer when she was pregnant she also pitched and unloaded both hay and grain. She said that she had been accustomed to this kind of work from the time she was about 13 years old. The summer following the birth of the last baby she did not make hay nor harvest, but instead she boarded masons and carpenters for three months while a new barn was being built.

INFANT WELFARE.

Infant mortality.

The term "infant mortality rate" means the number of deaths under 1 year of age per 1,000 live births. In ordinary statistical usage, such a rate is computed by dividing the registered deaths in a given area by the registered live births in the same period. Its value is dependent upon the completeness of both birth and death registration, and it has the further disadvantage that the infants who die are not necessarily the same ones who were born in the period and district under consideration. In its studies the Children's Bureau computes the infant mortality rate by following up each child born alive, to determine whether or not it was alive at the first birthday, the number of deaths in the group per 1,000 live births giving the rate. A rate of this kind, if based on a thorough canvass, can be obtained even where birth registration is incomplete, and gives a reliable index of the chances of death or survival in the group. In computing such a rate it is necessary to exclude all children born within a year of the time the study was carried on, since it can not be assumed that all those who were alive at the time of the agent's visit would live to the first birthday.

For the rural portion of the northern county—i. e., the whole county exclusive of the one city—the rate, based on birth and death certificates, for 1914 and 1915, together, is 73 per 1,000.[1] With complete birth registration the actual county rate would probably have been lower than this; but even as it stands, it is lower than the average for the rural parts of the urban counties (counties containing cities of at least 10,000 population) of the State, which was 83 in 1914 and 78 in 1915.[2] The birth and death certificates for the townships chosen showed that taken altogether these districts were fairly representative of the county in respect to infant mortality.

[1] Twenty-sixth Report of the State Board of Health of Wisconsin, 1916, pp. 316–318.
[2] Ibid., p. 310.

The infant mortality rate, based on the death or survival of the babies for whom schedules were secured, turned out to be considerably lower than the preliminary figures based on the certificates. Namely, out of 237 babies born alive a year or more before the investigation, 14 died before they were 1 year old, giving an infant mortality rate of 59 per 1,000. Fourteen of the 238 babies born alive within the year had died before the visit was made, and a few more deaths in the first year of life might be expected in this group (giving a rate probably somewhat in excess of 59 per 1,000). Therefore, the babies in this county have a considerably better chance of survival than the average. Even the rate given by the survey, however (59 per 1,000), should not be accepted as satisfactory. It should always be remembered that any deaths among babies means something wrong somewhere, and every community should set as its aim the preservation of all its children.

Premature birth and congenital debility were responsible for a greater number of deaths, 9 out of 28, than any other group of causes. Of similar significance is the fact that 7 of the 28 deaths occurred within the first day, and 15 (more than half) before the child was 2 weeks old, in contrast with a proportion of 38 per cent of deaths under 2 weeks in the death-registration area in 1915.[1] The main line of attack in efforts to reduce infant mortality must clearly be directed toward improved maternity care. That this condition is general throughout the State was one of the conclusions reached in a State-wide study made by Dr. Mendenhall,[2] who says:

> In Wisconsin the infant death rate is falling and is in general not excessively high; but there is no decline in the deaths the first few weeks of life. The work done to save the babies has not as yet affected those who die at birth, who are too injured, too diseased, or too weak to live. The health of the mother and the care she receives in pregnancy, in confinement, and in the lying-in period must be studied if we wish to save the children who die at birth.

Excluding children born within the year preceding the investigation, the mothers interviewed had borne during their entire child-bearing history, 1,821 live-born children and had lost 162 of them before they were a year old—an infant mortality rate of 89 per 1,000.

In this county (see Table II, p. 91) the mothers of the American group had lost a somewhat larger proportion—97 per 1,000—of their babies than the German mothers—71 per 1,000. Among the babies of the Polish mothers, however, the infant mortality rate had been much higher—114 per 1,000. The Polish mothers of both foreign and American birth had lost more than 1 in 10 of their babies; the American-born Polish mothers had the worst record of any group—an infant mortality rate of 134 per 1,000. Within the survey period,

[1] Mortality Statistics, 1915, p. 645. U. S. Bureau of the Census. Washington, 1917.

[2] Mendenhall, Dr. Dorothy Reed: "Prenatal and natal conditions in Wisconsin," in Wisconsin Medical Journal, Vol. XV, No. 10 (March, 1917), p. 358.

also, the deaths among the babies of the Polish mothers were excessive. This is not surprising, in view of the unhygienic standards of living and of feeding and caring for the children prevalent in the Polish communities. The German mothers born in the United States succeeded in bringing through the first year a larger proportion of their babies than the American mothers; but the foreign-born Germans did not do so well.

Stillbirths and miscarriages.

Another problem dependent for its solution upon better prenatal and obstetrical care is that of the loss of potential child life through stillbirths and miscarriages. This is evidently an important problem in this county, for both the stillbirth and miscarriage rates were high.

Within the two years of the survey the mothers interviewed in the northern county had 19 stillborn children—38 per 1,000 births. This is somewhat higher than the average stillbirth rate—34 per 1,000—in the seven cities where this problem has been studied by the Children's Bureau; apparently, therefore, rural conditions as exemplified in this district have not operated to cut down the stillbirth rate. That it might be much lower is indicated by the fact that the stillbirth rate in the Kansas study was only 11 per 1,000 births.

For the two-year period studied, the German mothers had proportionately more than twice as many stillbirths as the mothers of the American group, and also a higher proportion of stillbirths than the Polish mothers (see Table III, p. 91). When all the pregnancies of these mothers throughout their childbearing history are taken into account (see Table IV, p. 92), the stillbirth rate, 2 per cent, is lower in the total and in each group than when only the last two years' history is included; but the relations between the different nationality groups are the same. The mothers of the miscellaneous foreign group had the highest percentage of stillbirths—6 per cent; next came the German mothers, with a rate of 3 per cent; then the Polish, 2 per cent; and the American mothers had the low rate of 0.9 per cent. Without question the Polish mothers had the least adequate care at childbirth, but nevertheless they show the lowest stillbirth rate of any foreign group.

The mothers interviewed reported two or three times as many miscarriages as stillbirths—6 per cent of their total issues. This is the highest rate found in any of the Children's Bureau rural studies and nearly one-fifth higher than the average rate for all the cities studied (5 per cent). Again we find the German, and especially the "other foreign," mothers having more miscarriages than the Polish mothers; there was little difference between the American and the German groups in this respect.

Feeding customs.

Breast feeding was general. Only a few (13) babies were artificially fed from birth; 26 (6 per cent) were weaned before the middle of the first month. Only a small proportion, less than one-fourth, had any other food than breast milk before the middle of the third month. Nearly half the babies were still exclusively breast fed in the sixth month; but the proportion fell in the seventh month almost to one-fourth because of the custom of beginning other food besides milk at about 6 months of age. Only one-sixth of the 6-months-old babies had been weaned and not quite one-fourth (23 per cent) of those 9 months old. Breast feeding was continued well into the second year; at 12 months, half (55 per cent) the babies were still nursing; at 15 months over one-third; and at 18 months one-sixth; a few had not been weaned even by the second birthday. This custom, common in country districts, of nursing babies beyond the first year is disapproved by most medical authorities.

It is usually believed that foreign-born mothers resort to artificial feeding less than do native mothers. In this county such did not prove to be the case with the younger babies. In the early months, as indicated by the percentages in the first and third months, the American mothers of native parentage had a better record both for exclusive breast feeding and for not weaning their babies than the mothers of the German or the Polish group, or the whole group of foreign-born mothers. For the later months, however, as shown by the percentages for the sixth and ninth months, a larger proportion of the babies of foreign-born mothers were breast fed, indicating that these mothers continue nursing longer than do the American mothers. The Polish mothers continued exclusive breast feeding in these months to a greater extent than either the German or the American mothers. In the sixth month the percentage of babies weaned was lowest in the Polish group; but for the ninth month it was the German mothers who had the smallest proportion of their babies artificially fed (see Table V, p. 92). The foreign-born mothers postponed weaning somewhat longer than the native mothers, especially those of native parentage.

The proportion of infants weaned was smaller in the villages than in the country districts throughout the first year of life.

Birth registration.

In the northern county 110 children whose births had not been registered were found by the canvass. This was 24 per cent, nearly one-fourth, of the live births in the area. More than one-half (61) of these unregistered births occurred in one township; in the rest of the selected districts, the percentage of nonregistered births was only 14. The township where registration was so poor—61 failures out

of [illegible] live births—contained the recent Polish settlement, in which only [illegible] out of [illegible] live births were reported. Elsewhere in this township, however, the registration was worse than the average; and the township clerk had made no effort to enforce registration in the Polish settlement, although he was aware that the Polish midwife was reporting none of the births she attended. In the older Polish settlement, where practically all the births were attended by midwives, scarcely any went unregistered; this was due primarily to the activity of the clerk, who saw to it that births were reported to him even if only by word of mouth.

Of the [illegible] unregistered births discovered in this county [illegible] were attended by physicians and [illegible] by midwives. Outside the one Polish settlement where registration went so largely by default, only [illegible] unregistered births were attended by midwives; as a whole, therefore, the midwives may be said to attend to the registration of their cases at least as well as do the doctors. In one township the midwives had adopted the practice of having their cases reported by the father under his name as informant, with the result that the records showed practically no births attended by midwives.

In the northern county much will have to be done in the way of education of physicians and local registrars, as well as of parents and midwives, as to the importance and obligation of registering births before satisfactory registration is secured.

No unreported deaths of live-born children were discovered, but there were no death certificates for [illegible] of the [illegible] stillbirths, and no birth certificates for [illegible].

On the whole, the impression left after the visits with the mothers in this northern county was that they had met the demands of their strenuous pioneer life with notable success. In spite of the serious deficiency of adequate medical and nursing service and notwithstanding the heavy work done by these child-bearing women, most of them had experienced remarkably little difficulty in bearing and rearing their children. This, of course, does not remove the obligation of the families to lighten the mothers' work as far as possible, nor of the community to see that adequate care is provided. No mothers nor children should be subjected to avoidable risks; even though serious trouble may be infrequent, it is none the less calamitous when it does occur.

PART II. THE SOUTHERN COUNTY.

ECONOMIC AND SOCIAL CONDITIONS IN THE COUNTY.

This county lies in the southwestern quarter of the State, to the south of the Wisconsin River. It is approximately 25 by 30 miles in extent. The population in 1910 was between 22,000 and 23,000; it had remained practically stationary since the census of 1870, tending, however, to decrease. The decrease in the last decade was general throughout the county except in a few villages; in all probability it has continued during the years since 1910 except in the mining district. Within the county are 10 villages ranging from about 200 to 1,100 population; and two cities, of about 1,800 and 2,900. The smaller of these two cities, located near the center of the county, is the county seat. The larger is a center of an important zinc mining district.

Topography and soil.[1]

This part of the State is a beautiful rolling or hilly country, with many fine trees, ample farm buildings, fertile fields, and pastures full of cattle. The watershed between the Wisconsin and Pecatonica Rivers crosses from east to west through the middle of the county, forming a broad, level ridge nearly 500 feet above the Wisconsin bottom. This ridge and the valleys of the streams leading down from it in both directions are the important features of the local topography.

The streams flowing northward toward the Wisconsin River have cut deep narrow valleys, with the result that the whole northern half of the county is rugged and hilly, with precipitous ravines and cliffs in many places. In this area the soil both on the hills and in the valleys is silt loam of good quality, the valleys being considered exceptionally fertile where they are not subject to floods. But along the sides of the valleys are many steep, rocky bluffs which are useless to the farmer; and the hillsides, even where the soil is good, wash out in gullies if they are cultivated, and consequently can be utilized best as pastures. In the rougher parts of this section, the oak woods which originally covered all the hills are still standing, giving a wooded appearance to the whole landscape as seen from the ridge.

Along the ridge and in belts extending southward lies a rich rolling prairie which toward the west widens out into a nearly level

[1] Data from a soil survey made by the Wisconsin Geological and Natural History Survey.

plain. This prairie soil is fertile, and practically all of it can be cultivated; corn and small grains thrive, and the pastures of grass and clover are almost incredibly luxuriant.

The stream valleys leading southeasterly from the prairie reproduce in a general way the soil and topography of those to the north, except that the hillsides are not so steep nor so rocky.

Type of agriculture.

In the early days—from about 1829, when the agricultural development of the prairie uplands began, until about 1870—wheat was the chief crop of this county; this was followed for a time by flax. The soil depletion resulting from the continued cultivation of these crops was one of the causes of the change to dairying and stock raising which took place about 35 years ago.

At present dairying is the predominant branch of farming throughout almost the entire county; the chief exception is the western end of the prairie, where corn grows unusually well and many farmers make a specialty of raising or fattening market cattle and hogs. Elsewhere almost every farm produces milk for sale. Dairy farming is particularly well adapted to the hilly districts, comprising fully two-thirds of the county, because it provides an advantageous use for the hillside pastures; farms in these areas almost always include some bottom or hilltop land upon which the necessary grain and forage crops for winter feeding can be raised.

Nearly all the milk produced is sold to local cheese factories. In 1916 there were 131 of these factories; they are to be seen every few miles through the countryside, while there were only 7 creameries. A large number, probably more than half, of the cheese factories are owned by cooperative associations of farmers in the neighborhood. Where the farmers own the whole plant, they usually pay the cheese maker a fixed salary; where the cheese maker owns the machinery and furnishes the materials, he is allowed to charge a certain rate per pound for making the cheese and to take what profit he can out of that, while the rest of the proceeds goes to the farmers. There is keen competition between the managers of cooperative plants and the owners of factories in the same neighborhood, who pay a flat rate for milk, as to which shall yield the milk producers the larger return.

Since dairy farming was introduced—i. e., since about 1880—there has been little change in the agriculture of the county. The amount of land included in farms increased only 8 per cent during this period, and the acreage of improved land only 11 per cent; in the later years, along with the decrease in population, the number of farms has been growing smaller, and their size somewhat larger.

The proportion of [illegible] is not far below the [illegible] the total area of the county [illegible] estimated to be fit for [illegible] been for a generation, [illegible] diminishing population [illegible] to its physical characteristics.

The ordinary farm [illegible] size. According to the [illegible] one-third of the total [illegible] and over half of all the [illegible] Nearly half the farms [illegible] at least 200 acres.

Rural density.

Excluding the [illegible] county in 1910 was [illegible] the open country of [illegible]

Economic conditions.

This county [illegible] perous counties of [illegible] land values go [illegible] tracts along the [illegible] an acre. As a [illegible] prosperous [illegible] are ample [illegible] without [illegible] [illegible]

[illegible] that many homes are [illegible] it is necessary to cross [illegible] the way, or to drive a long [illegible] farm road in order to reach [illegible] to have arisen from the fact [illegible] roads were located; but what- [illegible] aggravates the isolation of many a [illegible] was reached only by climbing one [illegible] roads, told the agent that she was able [illegible] and had no neighbors within walking [illegible]

[illegible] over most of its area both with rural [illegible] phone lines. Among the families visited [illegible]

[illegible] in the Central Mountain and Pacific States, 1914 [illegible] Bulletin No. 389.

It so happens that in this district the tenant in most instances occupies a dwelling which the owner built for himself before retiring; thus he is comfortably housed and has good farm buildings. It takes considerable capital for cattle and other equipment before a man can farm even as a tenant in this district; consequently the really poor renter is seldom found, except as an occasional immigrant (usually Swiss) undertakes the seemingly impossible.

After an enterprising farmer has rented a farm for a time he usually attempts to buy his land, and with prices as high as they are this almost inevitably means a burdensome mortgage. A farmer in this case is apt to have a worse time financially than a tenant. On the other hand, farm owners who have their land paid for, or who have inherited a farm, are as a rule in very comfortable circumstances.

Nationality.

This county is predominantly native American; at the last census only 14 per cent, or less than one-seventh, of the population was foreign born. The American born were about equally divided between those whose parents were native and those whose parents were immigrants. English, German, and Norwegian were the chief foreign nationalities represented, both among the foreign born and those born in the United States. In the main, these nationalities are well assimilated into the community, and the atmosphere is nowhere strongly foreign. The more recent immigration, of smaller volume, falls into two distinct classes—farmers, chiefly German Swiss, many of whom came into the county as farm hands and subsequently took farms in the rougher districts which the native farmer considered hopeless; and mine laborers of various Slavic nationalities who are found in small groups in the mining settlements.

Literacy and education.

As might be expected of a well-established, prosperous, native farming district, there is little illiteracy. Outside the larger city (the only one of over 2,500 population), the illiteracy rate among the native born was only 0.6 per cent, while among the foreign born it was only 7 per cent.[1] All the American-born mothers visited in this county and all but two of the foreign born were able to read and write.

The country schools are all one-teacher schools, and the salaries paid are low, $320 a year being the most common stipend. The villages do better in this respect, for they have graded schools and the teachers receive a slightly higher salary, most commonly $450. Nine-tenths of the country schools had an eight-months' term; 9 of the 10 villages in the county, as well as the two cities, maintain high

[1] Thirteenth Census of the United States, 1910, Vol. III, Population, pp. 1087, 1099.

schools. Consequently secondary education is fairly accessible to country children in most parts of the county and would be within the reach of nearly all if the roads in winter were better.

Means of communication.

Two main railroads and three branch lines cross the county; most of its area is sufficiently equipped with railroad facilities, though there are isolated neighborhoods. However, the railroads are so located that intercommunication is difficult. The lower half of the Wisconsin River drainage slope has practically no railroad communication and consequently almost no intercourse with the rest of the county; its urban center is a large city in the adjoining county. The two cities in the county, though they are only about 12 miles apart, have no direct railroad connection with each other, and none with large sections of the county. This situation is an obstacle to the county's uniting on any common plans or undertakings, for habitual travel and lines of interest follow the railroads almost exclusively.

One reason why this community is so dependent upon its railroad facilities is that its highroads are often difficult to travel. In 1914[1] there were only 20 miles of sand-clay roads, 5 miles of macadam, and no gravel roads—only 2 per cent of the total mileage surfaced. In some townships the dirt roads are well kept and even dragged regularly; but in spite of good care they are bound to be heavy in wet weather—which means several months of the year. In the hilly country it is so difficult to get about during the winter and spring that some families away from the main roads reported that they had been practically marooned for long periods. Many of the hill roads are hardly more than ungraded tracks, painfully steep and rocky. But the worst roads of all are in the mining district, where the heavy hauling from the mines will ruin even a macadam road within a short time.

A peculiarity of this part of the State is that many homes are located so far back from the highroads that it is necessary to cross two or three fields, opening gates along the way, or to drive a long distance across the hills over a rough farm road in order to reach the dwelling. This condition is said to have arisen from the fact that the houses were built before the roads were located; but whatever the explanation, it certainly aggravates the isolation of many a family. One mother, whose home was reached only by climbing one of these rough, hilly private roads, told the agent that she was able to go to town only once a year and had no neighbors within walking distance.

The county is well supplied over most of its area both with rural mail delivery and with telephone lines. Among the families visited,

[1] Public Road Mileage and Revenues in the Central Mountain and Pacific States, 1914. U. S. Department of Agriculture, Bulletin No. 389.

only five had to go as far as half a mile and only one as far as a mile to reach a telephone, while the large majority had their own telephones.

SELECTED TOWNSHIPS.

The study covered 3 of the 14 townships in the southern county. These were selected to represent different localities. One is just south of the Wisconsin River, embracing some bottom land but lying largely in the rough, hilly country; this township includes one village of between 300 and 400 inhabitants. The other two are on the southern border of the county; both include some prairie and some more hilly land along the streams. One of the two latter townships is purely agricultural and contains no village but only a couple of small hamlets. The other lies partly in the mining belt and includes two villages, in both of which mining is an important factor.

FAMILIES INCLUDED IN THE SURVEY.

In the southern county less than one-fourth (38) of the 161 families visited were village people; the others lived in the open country.

Nationality.

Half (51 per cent) the parents in these families were native born of native parentage. In this county, as distinguished from the northern, the generation of parents who were the children of immigrants had largely lost their foreign characteristics and did not stand out as a distinct factor in the community. This group formed a little over one-third (35 per cent) of the total; about one-fifth were of German (paternal) parentage, and the rest of various other nationalities. Only about one-seventh (14 per cent) of all the parents were foreign born; of these one-third were German. These German immigrants nearly all came from Switzerland. In the mining districts five Serbian mothers and two Polish mothers had babies who were included in the survey. Of 20 foreign-born mothers, all but 7—4 German Swiss and 3 Serbian—could speak English; in no instance had a native mother of foreign parentage so far escaped amalgamation as to be unable to speak the language of the country where she was born and reared.

Father's occupation.

In this county 87 per cent of the fathers in the country families visited were engaged in farming; 3 farm managers and 10 farm laborers were included in this group of 107. Eleven zinc-mine employees formed the largest group of nonfarmers. Three cheese makers, 1 storekeeper, and 1 "odd-job" laborer completed the list.

In the villages, the zinc miners were in the majority; the others were scattered among the usual village occupations.

Land tenure.

The proportion of farmers included in the survey who were tenants (44 per cent) was twice as high as the census figure of 20 per cent for the entire county. Forty-four per cent is a high proportion of tenancy and indicates that the fathers, who were financially responsible for the care of the mothers and babies with whom this survey is concerned, were not as well able to meet this responsibility as census data for the county would imply.

MATERNITY CARE.

Of the 161 mothers visited in this county, 14 had borne children twice within the two-year period of the survey; half (52 per cent) those who had been married at least two years had borne children or had a miscarriage on the average more than once for every two years of their married life.

Availability of physicians.

The American Medical Association Directory of 1916 lists 22 physicians in the county; this gives approximately 1,000 persons per physician, which is somewhat less than in the other county but still higher than the average for the United States. All but one of the villages had resident physicians at the time of the survey; nevertheless there are a few places where a country family may be 10 miles or more from a doctor. The central part of the Wisconsin River slope is the most isolated district, and it is there in the hills that the roads are worst. A distance of 10 miles may be a serious barrier here when travel is difficult because of mud or snow. Only 2 out of the 135 confinements in the selected country districts occurred where there was no doctor within 10 miles, while half (49 per cent) these families had a doctor within 5 miles. But at 12 confinements the attending physician was summoned from 10 miles or more away.

The one village without a doctor in the southern county was included in the survey. This place is 4 miles from a railroad and, though there was a physician at the nearest railroad point and two others 6 miles away, the doctors had to use roads cut up by the hauling of ore from the mines—a state of affairs not conducive to a rapid response to a call.

Attendant at birth.

No midwife was practicing in any of the districts where the investigation was carried on nor, so far as could be learned, anywhere in the county. All the confinements in the villages were attended by physicians; and nearly all—130 out of 135—of those in the county. At the remaining five births there was no attendant except the father or grandmother or a neighbor. One of these cases was a

sudden triple birth, in the middle of the night, at which the astounded father was compelled to assist after a fruitless attempt to summon help over a disabled telephone. Fortunately he had had previous experience in such emergencies, and nothing went wrong. It was not the family's intention to do without a doctor, but three out of five times they had been unable to have one on hand at the birth. In another of these families the doctor had been summoned but failed to arrive in time to be of any service. The other three families deliberately dispensed with the doctor's services; in one instance, because of poverty; in one, because the grandmother did not approve of having a doctor at childbirth; and in the third, because the father had called a doctor on two previous occasions but the physician had not arrived on time; so he decided that "we were just as well off without."

Among the mothers who are counted as physicians' patients were 13 whose doctor did not arrive until after the birth had occurred, sometimes only a few minutes late but in two cases as much as an hour. Most of these doctors had to come 5 miles or more.

Hospital confinements.

There is a general hospital of 30 beds at the county seat, a private hospital in the same city, and two small private hospitals in the other city. Certain districts are more accessible to hospitals outside the county; in no case would it be necessary to travel more than two or at most three hours by rail to reach a hospital somewhere. Of course for a good many families it is more difficult to get to the railroad than to make the train trip; yet patients do manage to reach a hospital when it seems imperative, though the delay in an emergency may be serious. The general hospital at the county seat reported caring for 18 obstetrical patients in 1916, 10 of whom came from outside the city. However, only three mothers from the townships studied went to hospitals for confinement during the period covered; all these went outside the county. These mothers had no especial reason to anticipate complications at confinement—and none arose except an instrumental delivery in one case—but chose the hospital as the most convenient method of providing the necessary care.

Obstetrical service.

The use of obstetrical forceps proved to be even more common here than in the northern county. Whereas less than 5 per cent of the deliveries in the county studied in Kansas were effected with instruments and 10 per cent in the other Wisconsin county, the proportion here was 14 per cent, or 25 cases. Eleven of these instrumental deliveries were first births. One resulted in a stillbirth and two in deaths within two days. The use of forceps was largely concentrated in the practice of one physician, who performed 15 instru-

mental deliveries among 35 confinements attended within the survey period; if his cases are deducted, only 7 per cent of the remaining deliveries were instrumental. The physician who had the largest obstetrical practice in the selected districts of that county delivered only 1 out of 46 children with forceps.

It is, of course, difficult, as has been said, for a country doctor with a large area to cover to visit his patients as regularly as is possible in city practice. Furthermore, the charge which a physician must make for additional visits miles away from his headquarters seems to many country families an expense which they are unwilling to incur unless the necessity is forced upon them. Nevertheless a mother is exposed to unjustifiable risks when, as happened to nearly one-third of the country mothers in the survey, her doctor never sees her after the day the baby is born. Only about one-fourth of the country mothers attended by physicians had more than one visit from the doctor subsequent to the delivery. In the villages the doctors revisited the majority of their obstetrical patients at least twice, but two mothers in villages where there was a resident physician were never seen by the doctor after the delivery of the baby. It should be noted that the mothers in this county received considerably more postnatal care than those in the north.

Nursing care.

In none of the districts studied was there a resident trained nurse; during part of the time none could be secured anywhere in the county. Consequently, aside from the expense of her salary, having a trained nurse for confinement or any other sickness involved both the trouble and the expense of bringing her from outside the county; moreover, many country families, even when they can afford a trained nurse, do not appreciate the importance of adequate nursing care. Only two country mothers, and none in the villages, employed a trained nurse at confinement; another secured a trained nurse two weeks afterwards after blood poisoning had developed; another had her sister, who was a trained nurse, to help the practical nurse in charge of the case.

In each of the country districts and in two of the villages studied there were practical nurses, women who had had considerable experience in obstetrical nursing—they were sometimes called baby nurses. These were the main reliance of the families who made a point of getting the best available care; many of them were held in high esteem, and in a number of cases the family sent away to a neighboring village or city to secure such a nurse who stood in good repute. However, the history of one young mother showed the danger of untrained and possibly ignorant nurses. In her inexperience she intrusted her first baby to a so-called practical nurse who had

taken a correspondence course and "thought she would start out nursing." She fed the baby cows' milk and sweetened water the first three days. Then after nursing one day, he was sick and would not take the breast. The nurse tried various kinds of food, consulting the doctor only by telephone; she also "kept the baby asleep with dope nearly all the time." Finally, on the tenth day, he died in convulsions.

More than one-fourth (49) of the mothers visited were nursed during the puerperium by these practical nurses, but in only a few cases (10) did they do the housework. The remaining three-fourths of the mothers, with few exceptions, had to depend upon neighbors or relatives for nursing care.

Prenatal care.

The superiority of postnatal supervision in the southern county is accompanied by a much greater amount of prenatal supervision than was found in the northern county. Twice as large a proportion of mothers attended at birth by physicians had some prenatal care in the southern county (38 per cent) as in the northern (19 per cent). The difference between the counties is not great for village mothers but is very marked in the open country, a fact that is undoubtedly related to the greater isolation of the country districts studied in the northern county. In neither county can the situation be regarded as satisfactory; but any community where, as in the southern county, more than one-third of the mothers consult their physicians during pregnancy, has evidently begun to realize that prenatal care is worth while, both for the alleviation of present discomfort and for the prevention of later complications. Nevertheless, much ignorance on this point survives. For instance, one mother, living in comfortable circumstances on a large farm, stated that she vomited throughout pregnancy and was much troubled with headaches, swollen feet, and swollen eyes (symptoms suggestive of toxemia), but did not see the doctor at all—"just worried along." Her baby was stillborn at eight months.

The standards used in the study for classifying the medical prenatal care reported by the mothers are described on page 38.

According to these standards, none of the mothers in the southern county had adequate care; 13 had fair care, of whom only one was a primipara (carrying her first child); 9 other primiparæ had care which would have been fair except for the failure of the physician to measure the pelvis. Merely sending for medicine or advice, without a personal interview, was counted as no care. Of the 65 patients who had some care, 11 never saw the doctor, but merely sent the urine for examination; 19 others received no physical examination; 21 had no analysis of the urine made; 23 saw the physician only once.

cistern and thus give an inside water supply. Of 123 country families in this county, 25 reported water in the house; 21 of these had only rain water and had to bring their well water from outside. Of course, this arrangement is a great improvement over having to carry all the household cleaning and wash water from outside, for the purposes for which well water is required—drinking and cooking—take a much smaller quantity than do the cleaning and washing.

Even when the cistern pump or the rain-water barrel is outside, it is apt to be much nearer the house than is the well, for the barn has often a powerful attraction for the well. Partly as a result of that fact, the majority (52 per cent) of the families who had to bring in the household water had to carry it less than 25 feet and few (about 1 in 11) had to carry it as far as 100 feet.

Only two homes had running water piped into the house; one of these had a bathroom and water-closet. It is not uncommon in these districts to find the barn well, but not the house well, equipped with a windmill or engine to do the pumping; 16 families had an engine connected with the barn pump; and 14, one connected with the house pump. On the other hand, it was common for mothers in this county to tell the agents that they never had to carry the water, the men always carried it in for them; others reported that the men carried the water through the winter or carried the wash water. As in the other county, the water usually had to be carried up steps to the kitchen.

Both Wisconsin counties compare favorably with the one in Kansas as to nearness of the water supply to the house, and the southern county—but not the northern—as to the proportion of homes having inside water.

In this county, also, none of the villages included in the survey had a public water supply. About one-fourth of the village families had water inside the houses, but only one of these had running water with bathroom and water-closet.

Thirty-one country and 12 village families in the southern county had a sink for the disposal of waste water; this is just a few more than had inside water. Half the mothers in both country and villages had a washing machine; however, only one in the villages had a power washer, while 15 in the country were so provided. One ran her churn, and another the separator, by engine power.

Boarding hired men.

The large farms of the southern county naturally needed hired men more often than the smaller ones in the northern county. Consequently, in the southern county 54 mothers (out of 98 whose husbands were farmers or farm managers) reported that they had had to board "hands"—usually only one—during the period covered by the survey.

Work for the dairy.

In the southern county it was almost the rule that the dairy farms sold their milk to the cheese factories; on many farms the whole supply was hauled off immediately after the morning milking, leaving almost no milk even for the family's use. This relieves the housewife of the tasks connected with butter making or the sale of cream, but usually burdens her with many heavy milk cans to clean. In one southern township the cheese-factory manager said that the men were beginning to wash the cans, and he "couldn't see but that they did it about as well as the women"; but it is usually considered a woman's job. Only one-fifth of the mothers living on the farms of the townships included in the survey reported that they did churning; many of these made butter for their own families only. A good many others made butter but had some one else run the churn.

Milking and other chores.

As a rule the women of the southern county do little work outside the house, but half those on farms milked.

The care of the garden and of the chickens was the commonest of the outdoor chores done by the mothers here as elsewhere. About two-fifths of the mothers, both in the country and villages, worked in the garden. The care of chickens was a common duty, but in this county also the flocks were seldom large.

Field work.

Practically none of the mothers in the southern county did any work in the fields; field work for women goes absolutely against the local standards. One mother said indignantly, when asked about her work: "Mothers who work outside just don't care for their babies right." Three of the five who reported any field work were German; two of these helped with the haying, one husked corn two or three hours at a time, one picked corn and potatoes. One of the others picked apples and potatoes; one drove the plow and cultivator. The German mother who said she pitched hay two months before confinement was the only one who did any really heavy work; none of the five worked in the fields within a month of confinement.

INFANT WELFARE.

Infant mortality.[1]

Among the 90 live-born babies for whom records were secured in the southern county who were born at least a year before the survey began, 7 died before they were a year old; this is equivalent to an infant mortality rate of 78 per 1,000, or 1 death to 13 live births. Of the 83 babies born during the year just preceding the survey, 9 had died before the agent's visit, or 1 in 10 (108 per 1,000). It is evident

[1] For definition of the term, see p. 50.

that this figure, though considerably higher than that for the preceding year, is probably less than the true infant mortality rate for this year; for some deaths in this group may have occurred after the agent's visit but prior to the first birthday, since most of these babies at the time of the agent's visit were not yet one year old. In other words, at least 16 out of 173 babies in this county—approximately 1 in 11—died before they reached their first birthday. The probability is that the true proportion was somewhat higher than this.

In this county, according to the official figures, the infant mortality rate was 115 per 1,000 in 1914; in 1915 the rate fell to 88.[1] The combined rate for the two years was 102, or just a little over 1 in 10. It appears, therefore, after allowing for the differences between the two methods of computing the rates, that the agreement is reasonably close.

One death in 10 is the average rate for the United States birth-registration area, which in 1915 was 100 per 1,000. But it was slightly higher than the rate of 94 in the rural part of the birth-registration area, and is certainly higher than should exist in a prosperous rural community. The average for all the rural counties in Wisconsin was 76 per 1,000 in 1914 and 73 in 1915;[2] and several counties are credited with rates lower than 50 per 1,000.

In the southern county, and in the two counties together, the proportion of deaths was less among the babies of the country districts than among the village babies. Of the 260 country babies in the two counties, 14 died—an infant mortality rate of 54 per 1,000. This is still somewhat higher than the corresponding rate of 40 per 1,000 which was found among the babies of the open country in Kansas.[3]

Premature birth was responsible for half the 16 deaths in the southern county, in contrast with one-fifth of the deaths under 1 year of age in the registration area.[4] An excessive proportion—10 out of 16 deaths—occurred before the baby was 2 weeks old; 6 of these were deaths within the first few hours. Evidently, therefore, the effort to reduce infant mortality, in this county as in the other, must be directed primarily toward better maternity and prenatal care.

Excluding children born within the year preceding the investigation, the mothers interviewed in the southern county had borne during their whole child-bearing history 415 live-born children and had lost 34 of them before they were a year old—an infant mortality rate of 82 per 1,000. For both counties there had been a much higher pro-

[1] Twenty-sixth Report of the State Board of Health of Wisconsin, pp. 315 and 317, Madison, 1917.

[2] Twenty-sixth Report of the State Board of Health of Wisconsin, p. 310. Madison, Wis., 1917.

[3] Maternity and Infant Care in a Rural County in Kansas, p. 40. U. S. Children's Bureau Publication No. 26.

[4] Mortality Statistics, 1915, p. 645. U. S. Bureau of the Census. Washington, 1917.

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the first nine months higher in these two Wisconsin counties than in any of the other rural districts studied.

In all the rural counties the proportion weaned was lower throughout the first nine months than in any of the four cities—two middle western and two eastern—included in Table VI (see p. 92). Up to the fourth or fifth months a larger proportion of the Wisconsin babies were exclusively breast fed than in any of these cities; but in the later months the percentages of exclusive breast feeding are higher for the cities.

Birth registration.

In the southern county, 17 live-born children, born in the area studied, were discovered by the canvass to have been omitted from the register of births. This was 10 per cent of the total live births included in the survey; 15 of these 17 births were attended by physicians.

So far as indicated, therefore, by the selected districts, no great improvement would be necessary to bring birth registration in the southern county up to the minimum census standard of 90 per cent completeness. In both counties all the unregistered births discovered by the canvass were reported to the State board of health and investigated by it.

In the southern county it was found that three infant deaths (out of 16) had not been recorded. Failure to register deaths indicates an even more serious violation of the law than does the deficiency of birth registration, because the need for death registration is more widely recognized, and in general the registration of deaths is much more widely enacted and observed than is birth registration. Through the requirement of a burial permit before interment, the registration of deaths can also be enforced more easily than that of births. Furthermore, if many deaths are omitted the apparent infant mortality rate is an understatement of the true mortality rate, and a community when it becomes sufficiently interested to look up the figures may fail to appreciate the actual conditions.

The southern county is of interest mainly as an example of one of the most prosperous agricultural sections of the United States—the prairie lands of the northern Middle West. The conditions revealed by this survey are undoubtedly typical of the lives of a larger proportion of the farm women of the country than are those, in many respects more striking, found in isolated districts in the South and West. Moreover, there need be no financial difficulty in the community's providing adequately for the health of its mothers and children, even though some of its families would be unable to do this individually.

PART III. ACTIVITIES IN WISCONSIN ON BEHALF OF THE HEALTH OF MOTHERS AND BABIES.

This section of the report deals with work undertaken up to the close of the year 1917, for the protection of the health of childbearing mothers and of young babies in the rural districts of Wisconsin. Some of these activities are State wide in their scope, and it is believed that the account of these is complete. Others are local; and of these the report covers in full only the two counties in which the survey of maternity care was made.

No account of conditions in Wisconsin would be complete without mention of the active spirit of cooperation among the various public-health agencies. Often several different organizations are found working together on a common enterprise, with the result that the credit for accomplishment belongs not to any one but to the whole group.

WORK OF THE STATE BOARD OF HEALTH.

Birth registration.

Wisconsin is one of the States recognized by the census as having an adequate birth-registration law. Each township or incorporated village is a separate registration district for vital statistics, the township or village clerk acting as local registrar. The clerk is required by law to send the original birth and death certificates to the State office, and a copy of each to the county registrar of deeds; village clerks must also keep a local record, but in the township such a local register is not provided for. The county files of copies are also notoriously incomplete; hence it is necessary in most instances to send to the State office to find out whether a birth has been registered.

Within recent years the State board of health has been progressively increasing its efforts toward the strict enforcement of the birth-registration law. In 1917, it adopted the policy of prosecuting all failures to register which came to its attention, unless the offender presented an adequate excuse and gave his written promise to observe the law in the future. Knowledge of unregistered births is secured (1) from reports by local registrars, (2) from inquiries by parents, and (3) from checking hospital records of births. During 1917 the board also requested each county medical society to devote a meeting to birth registration, and where a society complied with this request the deputy State health officers were frequently sent to talk on the subject.

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LOCAL PUBLIC-HEALTH ADMINISTRATION.

In Wisconsin the townships and villages are important organs of local government. Among other functions, they are the units for local public-health administration. There are township, village, and city health officials, but none representing the county; next above the local unit stands the deputy State health officer, who is a full-time employee of the State board of health and has under his jurisdiction one of the five sanitary districts into which the State is divided. Each township or (incorporated) village board either acts itself as the local board of health or appoints such a board; this board then appoints the health officer, who may or may not be a physician. In townships and villages the clerk acts as registrar of vital statistics.

At the time of the survey the State registrar stated that somewhat less than half the local health officers in the State were physicians. In the 10 townships where the survey was made, 5 of the health officers were physicians and 5 were farmers; of the 5 incorporated villages, 4 had medical health officers—the fifth had apparently neglected to provide itself with any.

The local board also fixes the compensation of the health officer. Judging from the survey, $10 a year is the usual rural salary; in some cases the annual salary is supplemented, and in others replaced, by payments "by the visit," but the largest sum paid to any of these officers for the year preceding the survey was $18.25. Several had no compensation during that period because they "had put in no time"; one had been paid only $5 in five years, for posting quarantine twice.

As a rule, almost the sole duty of these local rural officers is conceived to be the posting and removal of quarantine notices and fumigation for the severe contagious diseases—scarlet fever, diphtheria, and smallpox. Only a few of the rural health officers interviewed attempt to placard measles or whooping cough or tuberculosis. If the officer is not a physician, he [illegible]s upon instructions from the attending physician [illegible]d how long to quarantine, and in such cases the phy[illegible]n paid by the township to do the fumigating. It is rare instances that a sanitary complaint is brought to

Since 1914 the board has sent to parents a card certifying to the receipt of the birth certificate for their child. This practice is undoubtedly a stimulus to the parents' interest in birth registration. During the course of the survey many mothers spoke of having these "papers" or wondered why they had not received them. The State board is said to receive about 200 inquiries a month from parents who failed to receive their cards.

In the latter part of 1917 the United States Bureau of the Census made a State-wide birth-registration test in Wisconsin, covering the births of two months. These tests were based not upon a canvass but upon live births reported to the census agents by postmasters, mail carriers, etc., throughout the State. In the outcome, 95 per cent of the births thus reported in each of the two counties studied in the Children's Bureau survey were found to have been registered.

Educational literature.

The State board of health publishes a bulletin on the care of babies, which is sent out to any citizen of the State making a request for it. The revised edition of this pamphlet, printed in 1917, contains a section on prenatal care—the mother's personal hygiene and the complications which must be guarded against. On the birth-registration certificate card is printed a notice that anyone may secure this bulletin free of charge, and many requests result from this notice. The pamphlet on the feeding of children published by the agricultural extension division of the State university (see p. 78) is also distributed by the State board of health.

Prevention of blindness.

The law[1] in Wisconsin requires that every obstetrical attendant must use a 1 per cent silver nitrate solution in the eyes of each newborn infant as a preventive measure against ophthalmia neonatorum or "babies' sore eyes," and provides for the gratuitous distribution of the proper solution. In accordance with these provisions, the State board of health sends out once a year to each physician, registered midwife, and health officer in the State a case containing six dozen ampules of silver nitrate solution, each designed for the treatment of one case. Additional supplies are sent as requested; about 2,000 requests are received in the course of a year.

It is the opinion of the executive officers that this prophylactic is very generally used. The law also requires that cases of inflammation of infants' eyes must be reported to the State board of health. Only about 10 such cases a year are reported.

Campaign against venereal disease.

Because of the direct causative connection of venereal disease with infant mortality, the efforts of the State board of health for the

[1] Laws of 1915, sec. 1400a-1.

prevention and cure of these diseases should be mentioned. Diagnostic service is provided by the various laboratories under the control of the board and by the State psychiatric institute; diagnoses are made free of charge for any licensed physician. The board of health publishes a pamphlet on the dangers of venereal diseases and the necessity of treatment by a physician; it also posts placards in suitable places giving the same information.

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the health officer's attention, while it is practically never conceived to be his duty to seek out insanitary conditions.

The general laxness found in the rural districts in enforcing or observing isolation of measles and whooping cough should be combated in the interest of the babies as well as that of the older children. A small, but not a negligible, proportion of infant deaths is always found to be due to these diseases. Whooping cough is especially apt to be fatal to young babies. In Wisconsin in 1915, 124 babies under a year old died of whooping cough, almost eight times as many as died from diphtheria.[1] In the families visited in the course of the Wisconsin survey, eight babies had died of whooping cough before they were a year old, in contrast with only two deaths from diphtheria. One township clerk, in discusssing measures needed for the protection of children's health, complained especially of the habit of some parents of carelessly exposing other people's children to the diseases which their children had, and urged that persons doing this be made liable for the results of their indifference. In that particular neighborhood such carelessness had extended even to scarlet fever.

WORK OF THE STATE BOARD OF MEDICAL EXAMINERS.

The law charges the State board of medical examiners with the duty of enforcing the medical practice act, including the examination and registration of midwives. Obviously a law drafted for the purpose of protecting the mothers of the State from untrained midwives does no good if not enforced. And that it is not enforced in the rural districts the survey furnishes ample proof.

The secretary of the board writes that a couple of years ago the midwives on a list made up from the birth-registration records "* * * were notified that they must become registered by examination or cease to practice. Beyond this notification the State board of medical examiners have been able to do nothing. We found after this investigation that the greatest majority of midwives were women along in the fifties and sixties, of foreign birth, who were unable to comply with the law, due to the fact that they must pass a written examination in the English language. The law provides for gratuitous service and service in the case of emergency, and their attention was called to the fact that such service was the only kind which they could render under the law. I think most of them understand the situation, but of course we have no way of knowing how they are complying with these requirements."

The attorney for the board stated that in the course of his connection with the board, extending back to its organization in 1897,

[1] Mortality Statistics, 1915, p. 549. U. S. Bureau of the Census. Washington, 1917.

two supervising nurses who spend part of their time in visiting the nurses throughout the State, and two demonstrating nurses who are available for short-time demonstrations of community nursing. The association also holds periodical conferences of the public-health nurses of the State, keeps in touch with them through correspondence, and furnishes them with educational literature and with blank forms needed in their work. It acts as an employment agency for communities wishing nurses, and for the past two years it has maintained training courses in order to help fill the dearth of adequately trained public-health workers.

Another valuable contribution is the research work by which the association has directed attention to health conditions in rural communities. Its tuberculosis survey of Dunn County in 1911 was a pioneer rural study, a forerunner of subsequent studies in many States dealing with health conditions among country school children and with infant mortality in rural districts. The research work of the association was influential in securing the passage of the State law authorizing the employment of county public-health nurses by county boards of supervisors, and of other enactments for the promotion of the public health.

RURAL PUBLIC-HEALTH NURSING.

At the close of 1917, 140 public-health nurses were at work in Wisconsin. A large proportion of these were in the city of Milwaukee, the majority were in smaller cities, and only 5 were doing strictly rural work. These 5 were all county nurses; 2 of them were employed by county boards of supervisors, 2 by the trustees of the Milwaukee County institutions, and 1 was supported by the sale of Red Cross seals. The last 3 concentrate their efforts chiefly upon tuberculosis work.

The legislature passed an act in 1913 authorizing county boards to employ nurses.[1] None did so, however, for two or three years afterwards. In 1916 a nurse was employed by Chippewa County; Waupaca County was added to the list in January, 1917; Lincoln in August; and Eau Claire voted the appropriation in the autumn. All these counties are in the north-central part of the State, in the same general section as the northern county of the survey. At the close of 1917 the nurses' positions were vacant in two of these four counties because no one could be found to fill the places;[2] consequently the nurses then in the service of county boards numbered only two, as has been stated. In both these counties the nursing work which was started as an experiment for a year only was made permanent at the next annual meeting.

[1] St. 1917, sec. 679–10m (constituting Laws 1913, ch. 93).
[2] These positions were filled early in 1918.

In each of these two counties—Lincoln and Waupaca—the nurse made school visiting and the inspection of school children the main feature of her work for the first year; one of the nurses expected to be able to make the round of her schools in about a year, the other in a year and a half. Both have been called upon to aid in checking school epidemics of contagious diseases. Both nurses established women's rest tents at their county fairs, where a simple health exhibit was displayed, literature was distributed, and the nurse was on hand to talk with mothers who wanted information or advice.

In Waupaca County the nurse helped with the Baby Week celebration in the largest village in the county. She also tries to hold a mothers' meeting whenever she visits a school; at these meetings she explains her work, and the mothers ask questions. Interest centers largely upon the inspection of the school children and the meaning and cure of the various defects found.

In Lincoln County the nurse took up her work in the summer with the belief that tuberculosis should be the first point of attack, but upon consulting the county records she found that the deaths from tuberculosis (22) were far overshadowed by the stillbirths (33) and deaths under 1 week of age (14) which, as she said, "are practically the same thing as stillbirths." In other words, she found that her biggest problem in life-saving would be that of prenatal and natal care. She has not been able to start any organized work along that line because of the pressure of school work beginning with the opening of the school term. But she says that she has spoken about prenatal and maternity care whenever she has had a chance to address an audience of women, and that she has found them much interested in the subject. Some women's organizations, at her suggestion, have undertaken to provide maternity outfits for mothers in need. The nurse has made an attempt also to get in touch with prospective mothers and has found it possible to establish such relations with a few pregnant women that she could give them advice on prenatal care. She has met with no midwives in her territory, though it is largely German.

In spite of the fact that neither of these two counties is excessively large—only about half the size of the northern county of the survey—each of the nurses felt strongly that her territory was much too large for one nurse. One had thought of dividing her county into four or five districts; then she believed that the work could be adequately handled.

The 1917 legislature made it legally possible to employ nurses in smaller units than counties.[1] By the terms of the act "the local board of health, health commissioner or health officer of any town [-ship], village or city may employ public health nurses"; "towns,

[1] St. 1917, sec. 1411g, as amended by Laws of 1917, ch. 123.

villages, and cities may * * * employ public health nurses jointly," on the same principle of sharing the cost according to population as joint-district high schools are now supported in many places. So far no action has been taken under these provisions, but such an arrangement seems to be the logical next step in the development of rural nursing.

In the southern county of the survey, there has been no public-health nursing in the rural districts. The county seat employed a school nurse on part time for the year following the survey (see p. 83).

In the northern county, the county seat has had a full-time school nurse for several years. In the city also is a small children's infirmary, in charge of a trained nurse who devotes part of her time to visiting nursing. She occasionally makes calls in the country, mainly for the purpose of getting sick children into the hospital. The county is so large, however, and so many districts are almost inaccessible that only exceptional cases come to her notice. This same infirmary nurse keeps a register of nurses, both trained and practical; she fills calls for trained nurses outside the city as well as in, and sometimes even outside the county, but says that she has never sent a practical nurse outside the city.

In the year following the survey one of the largest paper mills, located in one of the townships included in the survey, employed a visiting nurse primarily to care for the mill employees and their families. So far as her time allows, she also accepts other cases on call from the attending physician and examines the children in neighboring village and rural schools. It is of interest in connection with the subject of maternity care that for the first seven months of her service she reported having made 24 prenatal calls and 329 obstetrical nursing calls upon 33 patients.

LOCAL EDUCATIONAL CAMPAIGNS.

Baby Week.

Baby Week was widely celebrated in Wisconsin in both 1916 and 1917. The State-wide direction of the movement was primarily in the hands of the State federation of women's clubs; much assistance in providing speakers, literature, and exhibits and in suggesting programs was given by the Wisconsin Antituberculosis Association and especially by the university extension division. There is no way of telling to what extent the celebration reached the rural districts. However, the list of places published by the university extension division as observing Baby Week in 1916 contains a large proportion (over one-third) under 2,500 population, showing that the interest in Baby Week was by no means confined to the cities.

In 1916, a Baby Week celebration was held in each of the counties included in the survey; in the southern county this took place in the mining town (the larger of the two cities) and in the northern county in the county seat. In the latter, an elaborate program of lectures, demonstrations, and exhibits was presented; the main feature, however, was a Baby Health Contest, which lasted through four days. In this county, an effort was made to include the rural districts in the campaign. Extension meetings were held in seven villages; demonstrations were given by members of the State agricultural extension faculty, and speakers gathered for the city meetings brought to the smaller places the message of better care of mothers and babies. Twenty-five or thirty country babies were brought to the Baby Contest in the city, and these were included in the follow-up work during which a nurse employed by the central committee was sent out to visit the mothers of all babies registered in the contest.

In the following summer (1917) the committee which had charge of this "Better Baby Campaign" in the northern county employed a trained nurse—the demonstrator from the Wisconsin Antituberculosis Association—for three months' intensive work in the city. Infant-welfare stations were opened in four public schools, at each of which a weekly conference was held, with a doctor and the nurse in attendance; babies were examined by the doctor, talks on the care of babies were given by the doctor and the nurse, and literature was distributed. The nurse called once a week at the home of each of the 97 babies enrolled at the stations; she also supervised a few prenatal cases, making regular visits and examining the urine. No rural work was undertaken this year.

Children's health conference.

In 1916, in connection with the Children's Bureau survey, a children's health conference was held in the county seat of the southern county. This was undertaken, cooperatively, by the Children's Bureau, which furnished the physician and an assistant for the examination of the children; by the university extension division, which provided the exhibit, demonstrators, and speakers; by the State board of health, which sent a speaker; by the Wisconsin Antituberculosis Association, which furnished speakers and an organizer; and by a local committee of women who arranged places of meeting, provided supplies, and advertised the conference.

The central feature of this campaign was the physical examination of children by the Children's Bureau physician. This differed from a baby contest in that children were not scored nor prizes given. Its object was to teach mothers how to observe their own children and how to promote their health by suitable care and feeding, as well as to point out to the mothers defects which needed to

be remedied either by better hygiene or by a physician's care. In spite of cold weather and heavy rains which practically cut off the attendance of country families, 77 children were brought to the conference for examination.

As a result of the interest in children's health aroused by the conference, the local committee undertook to persuade the school district meeting to employ a school nurse. They were successful in this attempt, and a part-time nurse was employed in 1916–17; but, in the following year, "the authorities did not feel disposed to retain the nurse."

CONCLUSIONS.

The southern county in Wisconsin is an example, such as might be found anywhere throughout large sections of the Middle West, of a prosperous farming community on fertile soil, where the land is cleared, crops are abundant, and the necessary farm improvements—houses, barns, fences—as well as live stock have been provided. Therefore there should be no difficulty in financing any cooperative undertakings for the common good upon which the community may decide.

The northern county represents a different range of conditions. As a community engaged in converting "logged-out" land into farms and homes, it illustrates conditions common in the forest belt of Michigan, Wisconsin, and Minnesota. Its foreign settlements, also, are a feature common in those States and others as well, and it has certain characteristics common to most communities in the pioneer stage. As a whole it is still engaged in building up its farming capital—land values, buildings and dwellings, and live stock—out of meager beginnings. Many a farmer finds it beyond his means to provide adequate shelter and sometimes even adequate food for his family, while conveniences and comforts are for the present entirely beyond his contemplation. Even in those neighborhoods and families which have passed beyond that stage, the memory of pioneer hardships is still vivid and the habit of pioneer economy still strong. Consequently it is difficult, and probably seems more difficult than it really need be, to secure money for anything beyond the most primitive needs of the community. However, it should not be impossible to persuade the farmers in even the newest settlements that the protection of the health of their own wives and children is a matter of vital concern to them. Fortunately the influence of the county seat and of certain of the smaller centers could probably be counted upon to support a progressive public-health campaign.

Without question, the most urgent of the common needs in both counties, from the point of view of general utility as well as from that of providing for the safety of mothers and babies, is for good permanent roads which will remain usable throughout the year. None of the other needs can be adequately met until such roads cover the county so thoroughly that no home, even on the remote hill farms or forest clearings, shall be a mile and a half—or even half a mile—from a passable road.

The provision of a county public-health nurse would probably be the most useful "next step" which the county authorities could take in the interest of the mothers and babies on the farms and small industrial settlements. As we have seen, four counties in Wisconsin have already decided to provide such a nurse; there seems no good reason why the children of other counties in the State should not have the advantages provided for these children.

Such a nurse could be of service to country and village mothers in many ways, some of which can be foreseen from the experience of other communities and some of which would appear only as her work developed to fit the local needs. In many counties rural public-health nursing has begun with school nursing, including both the inspection of school sanitation and the examination of the pupils; but some counties might find it a good plan to begin with infant-welfare work. The nurse might establish a series of periodical mothers' meetings in different local community centers, usually in the villages but sometimes in a township hall or an accessible country school, where she could weigh babies, give simple demonstrations in infant care and home nursing, and talk with mothers who wish her advice. How to keep a baby well through the summer; what to do before the doctor comes, in an emergency such as croup or convulsions; how to nurse a sick child or a mother and newborn baby at home—these are all questions about which women are anxious to learn all they can. It is often a good plan to combine meetings of this kind with the establishment of a women's rest room in the village, where mothers coming to town for shopping and trading may find toilet facilities and a clean, quiet place in which to care for their children. A local committee should be organized to supervise the rest room and to help the nurse in her work. Such a rest room may in time be developed into a local health center, with exhibits and literature for distribution. Similar exhibits and mothers' conferences held in connection with a rest tent at the county fair have proved popular in other counties where they have been established by the nurse.

As these meetings became well established, the program might be widened to include such an examination of children by physicians as constitutes the main feature of a children's health conference and of many Baby Week celebrations. The experience of other communities, as well as the popularity of the examination held at the county seat in each of these counties in the year of the survey, shows that mothers are usually eager to take advantage of such an opportunity to secure expert advice about the health of their children when it is brought within their reach and fully explained to them.

The nurse's meetings with the mothers would usually in the beginning concern themselves with the health of babies and the younger

children but would naturally develop to include advice as to the mother's care of her own health, especially during pregnancy. The experience of the Lincoln County nurse shows that Wisconsin mothers are keenly interested in this subject also. A nurse who has had special training and experience in prenatal work can be of great help to the prospective mothers in the country, and to their physicians. She will so advise the mothers about daily details of their care of themselves that they will be able to avoid much discomfort and disability; she will urge them to see their physicians early for a thorough preliminary examination and later when necessary; she will urge them to send samples of urine regularly to be examined; or, if asked to do so, she may make these tests and report the results to the physicians.

In a territory so large and so difficult to get about in as are both these counties—especially the northern one—it would be impossible for any one county nurse to do any home nursing; in the northern county it would probably be impossible for her even to make the round of the rural schools more than once in two years. Therefore an effort might be made to arrange, possibly through private contributions or through the interest of an industrial plant in the health of its employees (as in the northern county), for a demonstration in some limited neighborhood of the advantages of a community nurse, who would be available to help the mothers in time of sickness, to nurse them at confinement, and to show them how to apply the principles of hygiene in their own homes. On the basis of such a demonstration, the county could in time be divided into nursing districts, each consisting probably of from two to five or six townships, with a trained nurse employed in each district. The last legislature made it legally possible to provide community nurses for such districts from public funds, on the same principle that joint-district high schools are now in many places supported by a village and two or more townships. At least three such districts would be needed in the southern county and at least six in the northern, in order to bring the district nurse into intimate contact with the people who need her help.

Each nursing district would normally center around some village which is a natural community center; each would have as a nucleus of interest the school inspection, the mothers' conference, and other lines of work previously established by the county nurse. The county nurse would, of course, take the lead in organizing the nursing service in the districts and should supervise the work in order to unify it and keep it up to the highest possible standard of usefulness.

The need which is felt by the largest number of country mothers in connection with their confinement care is the need for better nursing and household help. Therefore, they would undoubtedly

welcome the establishment of a service of supervised trained attendants—competent women who have had some training and experience in home care of the sick and who will do the housework as well as the nursing. In several communities it has already been proved that women can be found willing and anxious to do this work. The register of "practical nurses" now kept by the infirmary nurse at the county seat in the northern county might serve as a nucleus for a county-wide register. With a combination of county and district public-health nursing, it should prove feasible in these counties to conduct a county training course for attendants under the direction of the county nurse and to keep a register in each district from which mothers could obtain help in case of sickness. The attendants should always do their nursing under the supervision of the district nurse; this supervision by a trained nurse is essential to the success of the plan.

Even in the foreign districts of the northern county, where the midwife is now the main reliance for childbed nursing as well as for delivery, it should be practicable in time to make the supervised trained attendant popular, for the more competent midwives are in the main old women and none so trusted seem to be rising up to take their places. In view of this fact, it seems probable that even in the Polish settlements mothers will gradually come more and more to engage physicians for confinement and to need some one to take the midwife's place as nurse. A trained attendant would necessarily cost more than families of this nationality have been used to paying the midwife, but she would also give them more service, because she would remain in the home instead of making visits.

In both sections of the State there are hospitals to which mothers who need hospital care at confinement can be taken. Many isolated neighborhoods are at present almost out of reach of any of these hospitals so far as emergency service is concerned, but improvement of the roads would relieve this difficulty. A campaign of education in which the public-health nurses would naturally be the main agents is evidently needed to induce mothers (and physicians) to make use of the hospital facilities now available.

The State board of health has as yet no special division or officer charged with the duty of promoting the health of the children, the work which it does along this line being handled by the general administrative officers. It is the hope of the board that the next legislature may see fit to provide means for the establishment of such a bureau. A bureau of child hygiene would be of great service to mothers and children throughout the State and especially to those in rural districts who are out of reach of the various infant-welfare activities of the cities. It would serve to correlate many of the lines of work now carried on in the State, and could also undertake

new activities. All kinds of work for the prevention of infant mortality and of children's diseases would naturally fall within its scope. Like the Kansas Division of Child Hygiene, it might also find means to carry on an extensive campaign of education and advice as to the best standards of prenatal and maternity care. As the survey has indicated, this is one of the urgent needs in rural Wisconsin and therefore promises to be one of the most fruitful lines of activity opening before a child-hygiene bureau.

APPENDIX.

TABLE I.—*Per cent of physicians' obstetrical cases receiving postnatal visits.*

Districts.	Number of confinements attended by physicians.	Per cent receiving specified number of postnatal visits.			
		None.	One.	More than one.	Not reported.
Northern county	281	46	30	24	.....
Country districts	237	49	30	21	.....
Villages:					
Resident physician	35	20	29	46	6
No resident physician	9	67	22	11	.....
Southern county	170	25	41	31	3
Country districts	130	31	42	24	3
Villages:					
Resident physician	22	9	36	55	.....
No resident physician	18	6	39	55	.....

TABLE II.—*Infant mortality rates for each county, by nationality of mother, based on all births reported by mothers included in the study.*[a]

County, and nationality of mother.	Live births.	Infant deaths.	Infant mortality rate.
Northern county	1,821	162	89
Nationality of mother:[b]			
American group[c]	298	29	97
German group	689	49	71
Polish group	638	73	114
Miscellaneous and other foreign group	185	11	59
Not reported	11	.....	.....
Southern county	415	34	82
Nationality of mother:			
American	213	15	70
Foreign born or of foreign or mixed parentage	202	19	94

[a] Except births occurring in the last year of the survey period.
[b] See p. 23 for discussion of nationality.
[c] Includes one Indian mother.

TABLE III.—*Stillbirth rates for each county, by nationality of mother, based on births in two years.*

County, and nationality of mother.	All births.	Stillbirths.	
		Number.	Per cent of all births.
Northern county	494	19	3.8
Nationality of mother:[a]			
American group	99	2	2.0
German group	180	8	4.4
Polish group	157	5	3.2
Miscellaneous and other foreign group	53	4	7.5
Not reported	5	.....	.....
Southern county	178	5	2.8
Nationality of mother:			
American	98	4	4.1
Foreign born or of foreign or mixed parentage	80	1	1.3

[a] See p. 23 for discussion of nationality.

Table IV.—*Stillbirth and miscarriage rates for each county, by nationality of mother, based on all issues reported by mothers included in the study.*

County, and nationality of mother.	Total issues.	Total births.	Stillbirths.		Miscarriages.	
			Number.	Per cent of total births.	Number.	Per cent of total issues.
Northern county	2,214	2,087	48	2.3	127	5.7
Nationality of mother: *						
American group	370	350	3	0.9	20	5.4
German group	840	792	21	2.7	48	5.7
Polish group	740	710	11	1.5	30	4.1
Miscellaneous and other foreign group	250	221	13	5.9	29	11.6
Not reported	14	14	.....	.....	.....	.....
Southern county	522	504	9	1.8	18	3.4
Nationality of mother:						
American	267	260	6	2.3	7	2.6
Foreign born or of foreign or mixed parentage	255	244	3	1.2	11	4.3

* See p. 23 for discussion of nationality.

Table V.—*Per cent of infants breast fed and artificially fed, by mother's nationality, northern county.*

Nationality of mothers.	Per cent of infants exclusively breast fed during specified month.				Per cent of infants artificially fed during specified month.			
	1st.	3d.	6th.	9th.	1st.	3d.	6th.	9th.
All mothers	89.3	75.5	48.9	14.2	5.6	9.4	15.8	22.8
American group	90.2	77.1	49.2	13.0	3.3	7.2	18.5	25.9
German group	89.0	75.3	42.5	12.4	6.7	12.7	16.5	20.4
Polish group	90.1	74.6	62.4	22.2	5.6	9.7	14.7	24.4
All others and not reported	86.5	76.0	34.0	.....	5.8	2.0	12.8	21.9
All foreign born	88.9	73.9	58.7	19.5	5.9	9.0	14.1	19.5

Table VI.—*Comparison of feeding methods in Wisconsin with other rural districts and with four cities in which infant mortality investigations have been made.*

Locality.	Per cent of infants exclusively breast fed during specified month.				Per cent of infants artificially fed during specified month.			
	1st.	3d.	6th.	9th.	1st.	3d.	6th.	9th.
[illegible]								
[illegible]								
[illegible]	89.3	75.5	48.9	14.2	5.6	9.4	15.8	22.8
[illegible]	[illegible]	[illegible]	51.2	12.5	5.6	11.3	15.5	20.2
[illegible]	[illegible]	[illegible]	60.5	23.3	2.1	6.1	12.5	19.3
[illegible]								
[illegible]	89.4	74.6	50.0	17.0	.....	.....	1.7	3.8
[illegible]	74.3	62.3	34.1	15.9	.....	.....	.....	0.9
[illegible]								
[illegible]	[illegible]	74.3	53.9	28.1	9.0	15.6	24.2	29.2
[illegible]	[illegible]	74.2	[illegible]	28.7	7.1	15.5	22.9	29.5
[illegible]	[illegible]	62.4	[illegible]	18.4	15.0	28.8	42.5	51.0
[illegible]	88.4	66.2	44.9	26.0	12.3	24.7	37.2	46.8

* Bottle infants only.

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